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The Electrochemical Society
65 South Main Street, Building D
Pennington, New Jersey 08534-2839
USA

Phone: 1.609.737.1902
Fax: 1.609.737.2743

ecs@electrochem.org

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Inyeong Kang, Juyoung Jang, Moon-Soo Kim, Jae-Hun Kim, Jin-Woo Park, Young Whan Cho

156Comparision of Electrochemical Properties of Lithium Sulfur Battery with Lithium Foil Anode and Li Powder Anode

Sung Ho Cho, Woo Young Yoon

157Design of Electrochemical Cell for in-Situ X-Ray Microscopy Study for Energy Materials

Mingyuan Ge, Hanfei Yan, Xiaojing Huang, Yong S Chu

158Phase Diagram Approach to Study Acid and Water Uptake of Polybenzimidazole - Type Membranes for Fuel Cells

Federico Bertasi, Fosca Conti, Jurgen Wacker, Werner Lehnert, Carsten Korte, Vito Di Noto

159EU R&D Project "inside" - in-Situ Diagnostics in Water Electrolysers

Indro Biswas, Mathias Schulze

160Electrode Mapping; Effects of Porosity and Thickness on NMC Full Cells

Alexander Freigang

161 Organosilane Coatings for Ni-Rich High-Voltage Lithium Ion Batteries

Cameron Peebles, Fulya Dogan, Aude A. Hubaud, John T. Vaughey, Chen Liao

162 Temperature Effect on the Cell Life of Molten Carbonate Fuel Cell

Tae-Kyun Kim, Yu-Jeong Kim, Sang-Woo Lee, Ki-Jeong Lee, Choong-Gon Lee

163 Annealing Effect on ORR Activity of Carbon Black-Based Electrocatalysts

Wentika Putri Kusuma Asih, Haryo Satriya Oktaviano, Keiko Waki

164 Thermal Analysis and Modeling of an Ultracapacitor Module

Boram Koo, Sung June Park, Jaeshin Yi, Chee Burm Shin, Jongrak Choi, Ha-Young Lee

165 Synthesis and Characterization of Cross-Linked Anion Exchange Membrane Materials Based on Poly(p-phenylene)s for Redox Flow Battery Applications

Jang Yong Lee, Min Suc Cha, Tae-Ho Kim, Sangjun Yoon, Young Taik Hong

166 Improved Catalysts for Direct Methanol Fuel Cells

Dan Fang, Bo Yang, S. R. Narayanan

167 Hybrid Electrolytes Composed of Garnet-Structured Inorganic Electrolyte and Polymer Binder for Lithium-Ion Battery with Enhanced Safety

Yun-Chae Jung, Seul-Ki Kim, Man-Seok Han, Duck-Hyun Kim, Woo-Cheol Shin, Makoto Ue, Dong-Won Kim

168 Hydrocarbon Blended Membrane for Redox Flow Battery

Haekyoung Kim, Su Mi Park

169Nano Perovskite $SmFeO_3$ as an Electrode Material for Symmetrical Solid Oxide Fuel Cells

Weiwei Fan, Zhu Sun, Junkai Wang, Jun Zhou, Kai Wu, Yonghong Cheng

170Effect of Annealing Temperatures on Oxygen Reduction Reaction and Structure of Nitrogen and Sulfur Co-Doped Mesoporous Carbon Prepared from Polyquaternium-46

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171Templated Non Precious Cathode Catalysts Prepared By Transition Metal and Chitosan for Oxygen Reduction Reaction in Alkaline Electrolyte

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172Effect of Metal Ions Doping on the Structural and Electrochemical Properties of Olivine $LiFePO_4$

Santander M Nieto Ramos, Edgar E Mosquera Vargas, Mauricio Morel

173Synthesis and Electrochemical Characterization of LiMn2-xFeXO4 Cathode Materials for LI Ion Rechargeable Batteries

Rahul Singhal, Rajesh K. Katiyar, Ram Katiyar, Sam Chiovoloni, Peter Lemaire

174Solid State Battery Formulations: Influence of Compositions and Combinations

Tanghong Yi, Dee Strand, Gang Cheng, David Brecht

175Effect of Electrolyte Amount on the Performance in a Molten Carbonate Fuel Cell

Yu-Jeong Kim, Tae-Kyun Kim, Sang-Woo Lee, Ki-Jeong Lee, Choong-Gon Lee

176Li_2ZrO_3 -Coated $Li_{1.2}Ni_{0.2}Mn_{0.8}O_2$ for the High Performance Cathode Material in Lithium Ion Batteries

Hana Noh, Yongho Lee, Hyeongwoo Kim, Wonchang Choi

177Three-Dimensional Graphene Network As a Highly Macro-Porous, Flexible and Large-Scale Electrode for Supercapacitor Application

Che-Hsien Lin, Chuen-Horng Tsai, Fan-Gang Tseng, Chien-Kuo Hsieh

178Synthesis and Conductivity of Directly Cross-Linked Poly(vinyl alcohol)/ Bis (2 chloroethyl) Ether-1,3-Bis[3-(Dime- thylamino) Propyl]Urea Copolymer Composite

Jinli Qiao

179MnO_2 Nanotube-Supported CaO Nanoparticle, La_2O_3 Nanorod and Its Cabon Nanotube Hybridmaterial (La_2O_3/CaO/MnO_2-CNTs) As Bi-Functional Cathode Catalysts for Rechargeable Zinc-Air Batteries

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180Preparation of $Co(OH)_2$/Multi-Walled Carbon Nanotubes Composites for Supercapacitors

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181Different MnO_2 Nanotube As Bi-Functional Cathode Catalysts for Rechargeable Zinc-Air Batteries

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182(Invited) Advanced Zinc-Air Betters Based on Extremely Durable Bifunctional Air Electrodes

Jinli Qiao

183Me (Fe, Co, Ni)-Porous N Doped Graphene Catalysts Derived from One Step Synthesis Method for ORR in Alkaline Electrolyte

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184The Influence of Electrolyte Composition on the Electrochemical Properties of Li-Sulfur Dioxide Batteries

Tae Hyeon Yang, Hye Jeong Yang, Ji Hoon Kang, Seok Kim, Yongju Jung

185Sb-Ag Liquid Alloy Anode for Solid Oxide Fuel Cell with Carbon As Fuel

Nan-Qi Duan, Yong Cao, Bo Chi, Jian Pu, Jian Li, Yuan Tan

186Investigate of Cr Caused Degradation for SmxSr1-XMnO3 Cathode in the SOFC Atmosphere

Jian Pu, Chunyan Xiong

187Li Salt Rich Separator for Li-Ion Batteries

Djamel Mourzagh

188Understanding of Capacity Loss/Fading of Li-Rich Layer-Structured Cathode Materials Based on Structural/Electrochemical Analyses

Kuan-Zong Fung, Shu-Yi Tsai, Chung-Ta Ni, Wei-Zhi Lin, Bo-Yuan Huang

189High Ionic Conductivity, Mechanically Strong Ion Gels Made from Methyl Cellulose/PYR_{14}tfsi

Parameswara Rao Chinnam, Ramya Mantravadi, Stephanie Wunder

190In Situ Study of Strain-Dependent Ion Conductivity of Stretchable Polyethylene Oxide Electrolyte

Taylor Kelly, Bahar Moradi Ghadi, Sean Berg, Haleh Ardebili

191Solid Polymer Electrolytes: Material Design As Gel or Membranes for Battery Applications

Hassan Srour, Cyrille Monnereau, Christophe Bucher

192Evaluation of Silicon-Based Full Cells and the Importance of Scale-up

Mohan Karulkar, Hao Wen, Rachel Blaser, Robert Kudla

193Wide Temperature Range Electrolyte Formulations for Start-Stop Vehicle Applications

Gang Cheng, Ye Zhu, Dee Strand

194High Lithium Ion Transference Numbers for Multi-Ionic Salts in PYR_{14}tfsi/ Methyl Cellulose Ion Gel Separators for Libs

Parameswara Rao Chinnam, Vijay Chatare, Sumanth Chereddy, Ramya Mantravadi, Stephanie Wunder

195Influence of Porous Separators on the Ionic Conductivity of Nonflammable Liquid Perfluoropolyether Electrolytes

Didier Devaux, Yu Hao Chang, Irune Villaluenga, Xi chelsea Chen, Mahati Chintapalli, Nitash P. Balsara

196Novel Electrolytes for Low-Temperature Electrochemical Energy Storage Devices

Ying Shirley Meng, Cyrus Sam Rustomji, Yangyuchen Yang, Taekyoung Kim, Elizabeth Caldwell, Hyojung Yoon

197In Situ Transmission FTIR Spectroscopy Investigation of the Electrolyte Oxidation Reaction Under High-Voltage

Long Wang, Yulin Ma, Yunteng Qu, Yunzhi Gao, Geping Yin

198Enhanced Conversion and Storage of Solar Energy Using an All-Vanadium Continuous Photoelectrochemical Flow Reactor

Zi Wei, Yi Shen, Dong Liu, Fuqiang Liu

199A Soluble-Lead-Redox-Flow-Battery with Embedded Reticulated Vitreous Carbon and Inter - Digitated Graphite As Negative and Positive Plates

Musuwathi Krishnamoorthy Ravikumar, Ashok Kumar Shukla

200Real-Time Crossover Measurement in All-Vanadium Redox Flow Batteries

Yasser Ashraf Gandomi, Douglas Aaron, Matthew M. Mench

201Effect of Repeated Oxidation and Reduction of Glassy Carbon on V^{IV}-V^{V} Electrode Kinetics

Maria Al Hajji Safi, Mehrdad Balandeh, Joseph A Murphy, Nathan Quill, Robert Patrick Lynch, Andrea Bourke, D. Noel Buckley

202Effects of Electrochemical Pretreatments on the Kinetics of Fe^{II}-Fe^{III}, V^{IV}-V^{V} and Hydroquinone-Quinone Electrode Reactions on Glassy Carbon

Mehrdad Balandeh, Maria Al Hajji Safi, Robert Patrick Lynch, Andrea Bourke, D. Noel Buckley

203Noble Metal Nitride X Catalyst for H_2-Br_2 Redox Flow Batteries

Huong Doan, Amel Alsudairi, Shraboni Ghoshal, Michael Bates, Qingying Jia, Sanjeev Mukerjee

204Electrospun Carbon Nanofibers Decorated with Mn_3O_4 for Vanadium Redox Flow Battery

Alessandra Di Blasi, Concetta Busacca, Orazio Di Blasi, Nicola Briguglio, Vincenzo Antonucci

205Investigation of the Effect of Electrolyte Velocity on Mass Transport in Porous Electrode Utilizing a Symmetric Cell

Xin You, Qiang Ye, Ping Cheng

206The Effect of Membrane Fixed Charge on Ion Transport in All-Vanadium Redox Flow Batteries

Yuan Lei, Baowen Zhang, Bofeng Bai, Tianshou Zhao

207Operando Mössbauer Spectroscopy Investigations of Li-Ion Batteries and Non-Precious Metal Electrocatalysts for PEM Fuel Cells

Michel Sougrati, Jean-Claude Jumas, Lorenzo Stievano

208Generic Model Control for Lithium-Ion Batteries

Manan Pathak, Suryanarayana Kolluri, Venkat Subramanian

209Macroscale Vs. Microscale Simulation of Porous Battery Electrodes

Kenneth Higa, Shao-Ling Wu, Dilworth Y. Parkinson, Yanbao Fu, Vince Battaglia, Venkat Srinivasan

210Pseudo-Two-Dimensional (P2D) Reformulation Modeling of Li-Ion Batteries Using Kalman Filter (KF), Particle Filter (PF), and Hybrid Particle Filter (HPF) Algorithms

Larry Morris, Mark H Weatherspoon, Jamal Frederon Stephens, Pedro L. Moss

211Electrolyte-Electrode Interactions and Interphases

Selena M. Russell, Arthur v. Cresce, Kang Xu

212Tracking Electrochemical Processes at the Nanoscale: Operando Transmission Electron Microscopy of Lithium Dendrite Formation

Robert L Sacci, Jennifer Black, Nina Balke, Karren L. More, Nancy J Dudney, Raymond R Unocic

213Revealing Lithium Dendrite Morphologies Via in Situ Optical Microscopy and X-Ray Nano-CT

Danny X. Liu, Sarah Frisco, Pratiti Mandal, Jay Whitacre, Shawn Litster, Corey T Love, Karen Swider-Lyons

214Quantitative Life Prediction Using High Precision Coulometry with Automotive Current Rates

James Marcicki, Alvaro Masias, Thomas Coupar, Omar Elsayed

2153D Mapping of Lithium in Rechargeable Batteries

Howard Wang, Yuping He, Gregory Downing

216Printable 3-D Carbon Architectures for Li/S Rechargeable Batteries

Marco Bolloli, Maxime Schröder, Eric Mayousse, Rémi Vincent, Céline Barchasz, Benoit Chavillon

217Rational Design of Size-Selective Membranes for Next-Generation Electrochemical Energy Storage

Sean E. Doris, Ashleigh L. Ward, Peter D. Frischmann, Brett A. Helms

218An Innovative Polymer Design for Polysulphides Shuttle Effect in Lithium-Sulphur Batteries

Min Ling, Changan Yang, Hui Zhao, Zhe Jia, Huali Wang, Shan Fang, Gao Liu

219Assessments on Nafion Modifications of Lithium-Sulfur Batteries--Effects at Different Cell Positions: Sulfur Cathode, Separator and Lithium Metal Anode

Jing Luo, Nae-Lih Wu

220All-Solid State Lithium-Sulfur Batteries

Alice Cassel, Virginie Viallet, Mathieu Morcrette

221Sulfur Impregnated Expanded Graphene Cathode for High Performance Lithium Sulfur Batteries

Syed Ali Abbas, Pen-Cheng Wang, Chih-Wei Chu

222Improved Electrochemical Performance of Lithium-Sulfur Batteries Using a Modified Separator Coated with $Ca(OH)_2$ and Acetylene Black

Hongyuan Shao, Yaqin Huang

223Modified Separator Using Inactive Materials from the Cathode for Advanced Lithium Sulfur Batteries

Naiqiang Liu, Yaqin Huang

224Chemically Functionalized Graphene for High Performance Lithium/Sulfur Batteries

Yuegang Zhang

225Study of Room Temperature Solid Polymer Electrolyte for Lithium Sulfur Battery

Jin Liu, Yue Lin, Cheng Zhang, Yexiang Liu

A02-Future and Present Advanced Lithium Batteries and Beyond □ a Symposium in the Honor of Prof. Bruno Scrosati

Battery/Physical and Analytical Electrochemistry

226(Invited) Beyond Li-Ion Batteries: Why? , to Where?

Doron Aurbach

227Thermodynamics of Metal Cation Intercalation into V_2O_5(aerogel) Hosts

William H Smyrl, Dinh Ba Le

228Multiple Strategies for Development of Ambient-Temperature Sodium-Sulfur (Na-S) Batteries

Xingwen Yu, Arumugam Manthiram

229In Operando Studies of Electrode-Electrolyte Interfaces for Magnesium Batteries

Nathan T Hahn, Kevin R Zavadil

230Investigating the Oxygen Reduction Reaction in Lithium-Oxygen Cells

Shrihari Sankarasubramanian, Nikhilendra Singh, Jeongwook Seo, Jai Prakash, Fuminori Mizuno

231Scale-up of Rechargeable Mutivalent Batteries Via Pouch Cells Development

Seungbum Ha, Kevin G. Gallagher

232High Rate Li-S Batteries: Hollow TiO_2 Webbed Carbon Nanotubes with Dual Functional Porous Carbon-Paper

Jang-Yeon Hwang, Ali Abouimrane, Mohammad Ahmed Khaleel, Ilias Belharouak, Arumugam Manthiram, Yang-Kook Sun

233Solid State Rechargeable Li-Ion Batteries Prepared at Room Temperature over Flexible Organic Substrates: Performance and Limitations

Farid El Gabaly, Nicholas Ware, Elliot James Fuller, Albert Alec Talin

234A Novel, Semi-Solid Li/O_2 Redox Flow Battery

Francesca Soavi, Irene Ruggeri, Catia Arbizzani

235Recent Attempts to Improve the Capabilities of Commercial CFx to Enhance the Efficiency of Li/CFx Batteries

Dayal T. Meshri, Elena M Shembel, Sanjay D. Meshri, Robert L. Adams, N.C. Mathur, Devender Pinnapareddy, Vlad I Redko, Irina M Maksyuta, Alexandr V Markevich

236Investigation on the Conversion Reaction Voltage and Reversibility of CuF_2 Electrode in Li-Ion Battery

Joon Kyo Seo, Hyung-Man Cho, Mahsa Sina, Katsunori Takahara, Karena W Chapman, Olaf J Borkiewicz, Ying Shirley Meng

237From 1-D to 3-D Li Intercalation: Channel-to-Channel Li Migration Facilitated By Antisite Disorder

Jae Chul Kim, Dong-Hwa Seo, Gerbrand Ceder

238In Situ Measurements of Solid Electrolyte Interphase Evolution on Silicon Electrodes

Insun Yoon, Daniel P Abraham, Brett L Lucht, Allan F Bower, Pradeep Guduru

239(Special Invited Talk) The Lithium Battery Saga: From the Origin to the Future

Bruno Scrosati

240A Novel Sulfur Cathode Architecture for High Capacity and Durable Li-S Battery

Ruchira Dharmasena, Gamini U Sumanasekera, Jacek B Jasinski, Arjun Thapa, Mahendra Kumar Sunkara

241Mesoscale Interplay of Physicochemical Processes in Li-S Battery Electrodes

Aashutosh Mistry, Zhixiao Liu, Chien-Fan Chen, Partha P. Mukherjee

242Novel Liquid and Polymer Electrolytes for Lithium-Sulfur Batteries

Stefania Panero, Maria Assunta Navarra, Lucia Lombardo, Fabiana Savi, Luis Aguilera, Khalid Elamin, Aleksandar Matic

243Toward the Polysulfide-Shuttle-Free Lithium-Sulfur Batteries with Functionalized Polymer Electrolytes

Xingwen Yu, Jorphin Jorseph, Arumugam Manthiram

244Enhanced Rate Performance of Li-S Batteries Enabled By Polysulfide Reactions

Nae-Lih Wu, Rung-Chuan Lee, Jian-Ting Jin, Jason Fang

245Lithium Sulfide Nanocrystals Synthesized By an Energy-Efficient Process for Advanced Rechargeable Batteries

Xuemin Li, Chunmei Ban, Colin Wolden, Yongan Yang

246Highly Ordered Complex Framework Materials (CFMs) As Sulfur Hosts for Li-S Batteries

Pavithra Murugavel Shanthi, Prashanth Jampani Hanumantha, Bharat Gattu, Oleg I Velikokhatnyi, Prashant N Kumta

247Transition Metal Sulfides As Conductive Additives for Sulfur Electrode in Li-S Battery

Ke Sun, Dong Su, Qing Zhang, David C Bock, Amy C Marschilok, Esther S Takeuchi, Hong Gan

248Diffusion Barriers and Structural Evolution in Alpha-Sulfur for Lithium-Sulfur Batteries

Claire Arneson, Ying Ma

249Metal/Sulfur Composite Electroplated Cathodes for the Use in Lithium-Sulfur Cells

Oliver Kesten, Claudia Erhardt, Seniz Sörgel, Sandra Meinhard, Anne Bock, Timo Sörgel

250Effect of Ni/S Alloy Coating on the Composite Electroplated 3D-Sulfur Cathodes in Lithium/Sulfur Cells

Seniz Sörgel, Oliver Kesten, Anne Bock, Timo Sörgel

251(Invited) Catholyte-Based High Capacity Li-Sulfur Batteries

Du Hyun Lim, Florian Nitze, Luis Aguilera, Shizhao Xiong, Aleksandar Matic

252Electrochemical and Analytical Characterizations of Li-S Batteries

Afef Mastouri, Claude Guery, Mathieu Morcrette

253Focused Ion and Electron Beam Nanometrologies for Probing Structures and Properties of Sulfur Copolymer-Based Nanocomposite Cathodes for Next Generation of High-Energy Density Li-S Batteries

Vladimir P. Oleshko, Andrew Herzing, Kevin A. Twedt, Jennifer L. Schaefer, Jared J Griebel, Woo Jin Chung, Adam G Simmonds, Jeffrey Pyun, Christopher L Soles, Jabez J. McClelland

254Modelling Li-S Cells: Mechanisms behind Voltage- and Capacity-Drop during Discharge

Teng Zhang, Monica Marinescu, Mark Wild, Laura O'Neill, Greg Offer

255Mechanistic Understanding of Physical Processes in Lithium-Sulfur Batteries through Experiments and Modeling

Yiling Dai, Jing-Yang Wang, Guo Ai, Gao Liu, Venkat Srinivasan

256Mechanism and Kinetics of Capacity Fade in Lithium Sulfur Batteries

Jianhua Yan, Bingyun Li, Xingbo Liu

257(Invited) NMR Investigation of Ion Transport and Solvation in Electrolytes for Beyond Lithium Ion Applications

Steve Greenbaum, Mallory Gobet, Jing Peng, Stephen Munoz, Liumin Suo, Chunsheng Wang, Arthur v. Cresce, Selena M Russell, Oleg Borodin, Janet Ho, Kang Xu

258Charging Mechanism of Lithium-Sulfur Batteries: Insight from Spatially Resolved Operando X-Ray Absorption Spectroscopy

Yelena Gorlin, Manu U. M. Patel, Anna Freiberg, Qi He, Michele Piana, Moniek Tromp, Hubert A. Gasteiger

259New Insights on $Li_4Ti_5O_{12}$ Electrode/Electrolyte Interfaces: A X-Ray Photoelectron Spectroscopy and Scanning Auger Microscopy Study

Jean-Baptiste Gieu, Cécile Courrèges, Loubna El watani, Cécile Tessier, Hervé Martinez

260Operando Lithium Dynamics in the Li-Rich Layered Oxide Cathode Material Via Neutron Diffraction

Haodong Liu, Yan Chen, Sunny Hy, Ke An, Subramanian Venkatachalam, Danna Qian, Minghao Zhang, Ying Shirley Meng

261Long-Time and Reliable Gas Monitoring in Li-O_2 Batteries Via a Swagelok-Derived Electrochemical Cell

Florent Lepoivre, Alexis Grimaud, Dominique Larcher, Jean Marie Tarascon

262Core-Shell Structural Evolution of Crystalline Silicon Nanoparticles upon Lithiation/Delithiation By Ex Situ Raman Spectroscopy and Operando Synchrotron X-Ray Diffraction

Ekaterina Pavlenko, Lucille Quazuguel, Maxime Boniface, Samuel Tardif, François Rieutord, Manuel Marechal, Jean-Sébastien Micha, Vincent Mareau, Laurent Gonon, Sandrine Lyonnard

263Comprehensive Insights into the Surface Chemistry and Reactivity of Na^+ - Based Electrolytes

Gebrekidan Gebresilassie Eshetu, Sylvie Grugeon, Thomas Diemant, Stéphane Laruelle, Rolf Jürgen Behm, Michel Armand, Stefano Passerini

264Characterizing the Stability and Kinetics of Hybrid Oxide-Sulfide Solid Electrolyte Cells

Nathan J Taylor, Travis Thompson, Regina Garcia-Mendez, Jeff Sakamoto

265Characterization and Electrochemical Performance of Nanostructured Transition Metal (M= Fe, V, Mn) Oxides for Sodium-Ion Batteries Oral Presentation

Carol Ann Ellis-Terrell, Christopher Rhodes, Sanjaya Perera, Sibo Niu, Randall Archer

266Electrochemistry in the Next Generation of Rechargeable Batteries: Challenging the Maze with Multiscale Computational Modeling

Alejandro A. Franco, Yinghui Yin, Vigneshwaran Thangavel, Matias Quiroga, Mathieu Morcrette

267Understanding Interfacial Chemistry and Stability for Performance Enhancement of 4.55V Li-Ion Battery of $LiNi_{0.5}Co_{0.2}Mn_{0.3}O_2$//Silicon-Graphite Using FEC-Based Electrolyte

Dan Thien Nguyen, Joon Sup Kang, Kyoung-Mo Nam, Seung-Wan Song

268Electrochemical Behaviors of All-Phosphate Lithium-Ion Battery and All-Phosphate Solid-State Lithium-Ion Battery

Shicheng Yu, Hermann Tempel, Roland Schierholz, Özgür Aslanbas, Josef Mertens, L.G.J. de Haart, Hans Kungl, Rüdiger-Albrecht Eichel

269Beyond Electrochemical Lithium Ion Battery Characterization. Correlation of Chemical and Microstructure Analysis, a Unique Pathway for Studying Performance Characteristics and Failure Mechanisms

Stefanie Freitag

270(Energy Technology Division Supramaniam Srinivasan Young Investigator Award) Na-M-S-O Quaternary Cathode Materials for High Voltage Sodium Batteries

Debasmita Dwibedi, Prabeer Barpanda

271(Invited) Lithium Batteries and Its Diagnosis System

Tetsuya Osaka, Daikichi Mukoyama, Hiroki Nara

272Direct Visualization of the in-Plane and out-of-Plane Electrostatic Competition in P2 Type $Na_{2/3}TMO_2$

Danna Qian, Joon Kyo Seo, Jing Xu, Karren L. More, Miaofang Chi, Ying Shirley Meng

273Measuring Li^+ Inventory Losses in $LiCoO_2$/C Cells Using Ex-Situ Raman Spectroscopy

Chelsea Marie Snyder, David Duquette, Christopher A. Apblett, Anne M. Grillet, Thomas E. Beechem

274Utilising Shiners for the Study of Oxygen Electrochemistry in the Lithium-Oxygen Battery

Tom Galloway, Sarah Ball, Mark Copley, Laurence J Hardwick

275Probing Nonlinear Dynamics to Unlock New Insights into Battery Systems

Matthew D Murbach, Daniel T. Schwartz

276Determination of Individual Contributions to the Ionic Conduction in Litf/Pegdme-150 Liquid Electrolyte

Jelena Popovic, Joachim Maier

277Transition Metal Oxide Nanosheets for Improved Performance Li-Ion and Mg-Ion Cathodes

Christopher Rhodes, Sanjaya Perera, Randall Archer, Sibo Niu, Carol Ly

278Investigation of Structural Dynamics in Lithium Layered Oxide Positive Electrodes Via Coherent Diffraction Imaging

Sunny Hy, Andrej Singer, James Wingert, Haodong Liu, Andrew Ulvestad, Ross Harder, Oleg Shpyrko, Ying Shirley Meng

279Spark Plasma Sintering Study on the Super Ionic Glass Ceramic Conductor: $Li_7P_3S_{11}$

Han Nguyen, Sunny Hy, Iek-Heng Chu, Shyue Ping Ong, Ying Shirley Meng

280Stabilization and Functionalization of $P4_332$ Type $LiNi_{0.5}Mn_{1.5}O_4$ By Incorporation with Cu^{2+} Substitution and Characterization of Their Electrochemical Properties

Nobuyuki Zettsu, Hiromasa Shiiba, Kida Satoshi, Katsuya Teshima

281Advanced Processing and Electrochemical Analysis of Novel Sodium-Rich Anti-Perovskites Via Conventional Sintering and Spark Plasma Sintering Methods

Erik Wu, Han Nguyen, Sunny Hy, Thomas A. Yersak, Ying Shirley Meng

282$NaFe_{1-x}Mn_xPO_4$ $(0\leq x\leq 1)$ as Positive Electrode Materials for Na-ion Batteries

Morgane Giner, Montse Galceran, Marine Reynaud, Damien Saurel, Montse Casas-Cabanas, Teófilo Rojo

283Improved Lithium-Sulfur Cell with a Thin Barrier Membrane

Derek Moy, S. R. Narayanan

284Electrochemical Characterization of Advanced Sulfur Cathode Materials for Li-S Batteries

Dan Thien Nguyen, Alexander Hoefling, Young Joo Lee, Patrick Theato, Seung-Wan Song

285Transport Properties and SEI Stability of $Na_2Ti_3O_7$ electrodes for Na-Ion Batteries: An EIS Study

Maider Zarrabeitia, Francesco Nobili, Miguel Ángel Muñoz Márquez, Teófilo Rojo, Montse Casas-Cabanas

286Fe2O3/Carbon Nanocomposite As Cathode Catalyst for Non-Aqueous Lithium-Air Batteries

Maochun Wu, Tianshou Zhao

287The Redox Processes in Lithium Batteries : Beyond the Oxidation State Formalism

Guy Ouvrard, Alexandre Pradon, Maria Theresa Caldes, Florent Boucher

288Investigation of Few-Layer Exfoliated Graphene Platelets and Hierarchically Structured Paper-like Electrodes As Cathodes for Electrochemical Energy Storage: Lithium-Air Battery

Debkumar Saha, Lawrence T. Drzal

289One-Dimensional Nanomaterial for Energy Storage

Liqiang Mai, Xiaocong Tian, Lin Xu, Qiulong Wei

290Development of Novel Noncarbonate Electrolytes for Silicon Alloy Anodes

Ye Zhu, Gang Cheng, Dee Strand, Johnny Yang

291Improvement of Cycling Performance of Silicon-Graphite Composite Anode Using Blended Electrolyte Additives

Hyuntak Jo, Xuan Minh Tran, Dan Thien Nguyen, Do-Man Jeon, A-Reum Yang, Seung-Wan Song

292Molten Salt Synthesis of Transition Metal Oxides Modified $Li_4Ti_5O_{12}$ As Anode Material of Li-Ion Battery

Qingjun Guo, Bing Li

293Aqueous Ceramic Coating upon Hydrophobic Polyethylene Lithium-Ion Battery Separators through Use of an Anionic Surfactant

Hyunkyu Jeon, Daeyong Yeon, Taejoo Lee, Joonam Park, Suyeon Hwang, Myung-Hyun Ryou, Yong Min Lee

294Synthesis and Identification of Al-Based Ultrathin Films on Well-Defined Oxide Nanocrystals for Li-Ion Batteries

Linhua Hu, Jordi Cabana

295A New and Facile Method to Improve the Electrochemical Performance of Si Anode: Ultrathin Polydopamine Coating upon Conductive Carbon Particles

Danoh Song, Dae Soo Jung, Jaecheol Choi, Seokhyeon Kong, Myung-Hyun Ryou, Yong Min Lee

296Prototype Sodium-Ion Batteries Using Air-Stable and Co/Ni-Free O3-Layered Metal Oxide Cathode

Linqin Mu, Shuyin Xu, Yong-Sheng Hu, Liquan Chen

297Electrochemical Properties of Silicon Electrodes Having Polyimide Binders for Lithium-Ion Batteries

Danoh Song, Seung Hyun Lee, Kyuman Kim, Inseong Cho, Myung-Hyun Ryou, Won Ho Park, Yong Min Lee

298Influence of Electrolyte Solvent Properties on Li-O_2 Battery Discharge Product Morphology

Tatiana Konstantinovna Zakharchenko, Daniil Mikhailovich Itkis

299 Investigation of the Solid Electrolyte Interphase (SEI) in Polysulfide-Containing Glyme-Based Electrolytes

Marco Agostini, Xiong Shizhao, Aleksandar Matic, Jusef Hassoun

300 Development and Novel Characterization of All-Solid-State Thin Film Batteries

Thomas Andrew Wynn, Ziying Wang, Jungwoo Z Lee, Cyrus Sam Rustomji, Ying Shirley Meng

301 Investigation of Anatase-TiO_2 As an Efficient Electrode Material for Magnesium-Ion Batteries

Minghao Zhang, Alex C. MacRae, Ying Shirley Meng

302 Stabilization of Cubic-Na_3PS_4 to Enhance Ionic Conductivity of Solid Electrolytes for All-Solid-State Sodium Sulfur Batteries

Christopher Kompella, Han Nguyen, Sunny Hy, Zhuoying Zhu, Iek-Heng Chu, Shyue Ping Ong, Ying Shirley Meng

303 Structrual Stabilization of Layered NaxMO2

Masaki Matsui, Fumikazu Mizukoshi, Nobuyuki Imanishi

304 Synthesis and Nitrogen-Plasma Treatment of Carbon Nanotube/Graphene Composites As Anode Materials for Lithium-Ion Batteries

Chuen-Chang Lin, Ping-Lin Chang

305 Amorphous Silicon Nitride Thin Film Anodes for Li-Ion Batteries

Asbjørn Ulvestad, Jan Petter Mæhlen, Hanne Flåten Andersen, Oystein Prytz, Martin Kirkengen

306A Novel Strategy for Configuration of an Integrated Flexible Sulfur Cathode for High-Performance Lithium-Sulfur Batteries

Hongqiang Wang, Wenchao Zhang

307Facile Synthesis of Anhydrous Metal Fluoride Nanocomposites Using Ammonium Fluoride and Their Application to High Performance Lithium-Ion Battery Cathodes

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308Boron-Doped Carbon Coated Lithium Titanate As Anode Material for High-Rate Sodium-Ion Batteries

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309Electrochemical Conversion Reaction of $NiFe_2O_4$ Electrode As an Anode Material for Li-Ion Battery

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310Enhanced Electrochemical Reversibility of Li-Rich Layered Li_2MO_3 Cathodes: Understanding Aliovalent Co^{3+} Substitution with Excess Lithium

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311Fundamental Understanding of Li-S Battery Electrochemistry

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312Novel Electrode Materials for Rechargeable Magnesium Ion Batteries

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313The Role of the F Anion in the Spinel Structure for the Enhancement of High Rate Capability and Cyclability in $LiNi_{0.5}Mn_{1.5}O_{4-X}F_X$ Crystals

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314Freestanding Bilayer Carbon-Sulfur Electrode with Functionalized Porous Carbon for Entrapping Polysulfide in Improved Performance Li-S Battery

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315Highly Porous Electrospun $ZnCo_2O_4$ Nanofibers for Lithium Ion Battery Electrodes

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316Interconnected Ge/Cu Nanostructured Anodes for High Areal Capacity Li-Ion Microbatteries

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319Influence of Excess Lithium on the Electrochemical Performance of $Li_{1+Z}MnTiO_4$ Spinel Structure for High Capacity and Long Cycle Life

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322Investigation of the Degradation of Metallic Lithium Electrode Protected By Bilayer Solid Electrolyte in Lithium-Oxygen Batteries

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323Effect of Lithium in Transition Metal Layers of High-Ni Positive Electrode Materials on Electrochemical Properties

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324Surface Reactivity of a Carbonaceous Cathode in Li-O_2 CELLS

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325Ether Degradation Thermodynamics in Li-O_2 Redox Environments: A Computational Study

Sergio Brutti, Marco Carboni, Andrea Giacomo Marrani, Riccardo Spezia

326(Invited) Electrospun Electrolytes and Electrodes for Li-Ion Batteries

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327New Fluorine-Free Polycyano Fully-Conjugated Aliphatic Anions for Applications in Battery Electrolytes

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328Haloaluminate Ionic Liquid Based Electrolytes for Secondary Magnesium Batteries: Ab-Initio and Experimental Vibrational Analysis

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329On Printable in Situ Electrolyte Filled Battery Separators

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330Facile Reduction of Pseudo-Carbonates: Promoting Solid Electrolyte Interphases with Dicyanoketene Alkylene Acetals in Lithium-Ion Batteries

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331On Lithium Transference Number in Liquid-Solid Electrolytes

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332Exploring Cycling Behavior of NMC532//Gr-Si Cell in Fluorinated Carbonates Electrolytes

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333A Graphite-Polysulfide Full Cell with DME-Based Electrolyte

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334High Performance Lithium Ion Batteries from Electrochemically Enhanced Conducting-Polymer/Inorganic Composites

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335Performance of Li-Air Battery Cell with Folded Structure

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336Use of Al_2O_3/Nafion Membranes for Room-Temperature Sodium-Sulfur (Na-S) Batteries

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337The Use of Low Temperature Electrolytes in High Specific Energy Li-Ion Cells for Future NASA Missions to Icy Moons

Marshall C. Smart, Frederick C. Krause, John-Paul Jones, Larry D. Whitcanack, Ratnakumar V Bugga, Erik J. Brandon

338Separation of Reaction and Storage in Li-Air Battery

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339(Invited) Furture and Pressent of Aqueous Lithium-Air Batteries

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340Novel Ether- or Sulfur-Functionalized Ionic Liquids As Electrolyte Components in Advanced Lithium Batteries

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341Chemical Stability of $Li_7La_3Zr_2O_{12}$ garnet Solid-State Electrolyte

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342Effect of Densification Conditions on the Chemical, Electrochemical, and Mechanical Stability of $75Li_2S - 25P_2S_5$ (mol %) As a Potential Solid Electrolyte for Use in Electric Vehicles

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343A Lithium Stable High Lithium Ion Conducting Solid Electrolyte of $Li_{1.4}Al_{0.4}Ge_{0.2}Ti_{1.4}(PO_4)_3$ Coated with Thin Polymer Film

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344Ultrathin Solid-State Li-Ion Electrolyte Membrane Facilitated By a Self-Healing Polymer Matrix

Justin Michael Whiteley, Philip Taynton, Wei Zhang, Sehee Lee

345(Invited) The Solid-State Lithium Secondary Batteries: Its Possibility Beside the Sulfide Electrolytes

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346High Performance and Target Modeling for MnO and NiO Anodes for Li-Ion Batteries

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347Asymmetric Sandwich Membranes Containing Micron-Size Silicon As Anode Material for High Capacity Lithium-Ion Batteries

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348Chemically Etched Silicon Nanowires As Anodes for Lithium-Ion Batteries

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349Structured Anode to Inhibit Dendrite Growth in Li Metal Batteries

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350(Invited) Advanced Cathode Material for High Energy Sodium-Ion Batteries

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351Preparation of $LiCoO_2/Li_3BO_3/Li_{6.75}La_3Zr_{1.75}Nb_{0.25}O_{12}$ composite Electrodes By Using Flux Growth and Characterization of Their Electrochemical Properties for All-Solid-State Libs

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352Layered-to-Rock-Salt Transformation in Desodiated $NaCrO_2$

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353Effects of Ni/Co Doping on the Properties of $LiFe_aNi_bCo_cPO_4$ High-Performance Olivine Cathodes for Lithium Batteries

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354$Li_3Cr_2(PO_4)_3$ As Cathode Material for Li-Ion Batteries

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355Bacteria-Assisted Synthesis of Electrode Materials for Li or Na Batteries

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356Study of P2-Type Layered Oxide Cathode with High Power Density for Rechargeable Na Batteries

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357Chemically Synthesized Li_2O_2 Composite Cathode for Closed System Li-O_2 Batteries

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358A NiO-RuO_2 Nanoparticle-Decorated Carbon Powder Cathode for Non-Aqueous Lithium-Oxygen Batteries

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359On the Key Role of the Carbon Conductive Additive on the Performance of Si-Based Electrodes with High Areal Capacities

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360Silicon Nanoparticles Coated in Carbon By Scalable Laser Pyrolysis for Li-Ion Alloy Anodes - Control, Performance, and Optimization

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361Surface Analysis of Composite Cathodes in Li-Ion Batteries: SEI Composition As a Function of Spatial Origin and Cycling Protocol

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362Pressure Swing Recovery from Cyclic Delamination of Freestanding Carbon Nanofiber for Li-Air Battery Cathodes

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363(Invited) Reactions of Positive Active Materials of Lib

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364Nanoscale Mixed-Oxide Coatings for Improving Rate Performance of $Li[Ni_{0.5}Mn_{0.3}Co_{0.2}]O_2$ Cathode in a Rechargeable Li-Ion Battery

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365Engineering Metal Nano-Composite As Anode in High-Performance Li-Ion Batteries

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366Analysis of the Active Material Microstructure Constituting the Positive Electrode in Lithium-Ion Batteries Application

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368The Role of Composite Binder on Mechanics and Performance of Lithium Ion Battery Electrodes

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369Recent Advances in Cathode Materials for Li-Ion Batteries

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370Structural and Morphological Tuning of $LiCoPO_4$ materials Synthesized By Solvo-Thermal Methods for Li-Cell Applications

Sergio Brutti, Jessica Manzi, Daniele Di Lecce, Jusef Hassoun, Stefania Panero

371Advanced Characterization of Li- and Beyond Li-Ion Battery Cathode Materials Via Electron Microscopy

Patrick J Phillips, Daniel P Abraham, Robert F Klie

372Reversible Lithiation/Delithiation Behavior in Conversion-Type Tin Phosphide/Graphite Composite Anode for Li-Ion Batteries

Zhe-Fei Li, Yujia Ding, Carlo U Segre, Yuxuan Wang, Gerardine G Botte

373Systematic Variation of Sulfur Cathode Chemistry and Its Effects on Cell Performance

Brian Robert Perdue, Hannah E. Height, Josefine McBrayer, Christopher A. Apblett

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374A New Series of Anolyte Molecules for Non-Aqueous Redox Flow Batteries

Wentao Duan, Jinhua Huang, Fikile R. Brushett, Wei Wang, Jeffery S. Moore, Jun Liu, Xiaoliang Wei, Lu Zhang

375Conditions Causing Edge Corrosion in Flow-Battery Stacks

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376High-Performance Organic Redox Flow Batteries in Aqueous and Nonaqueous Electrolytes

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377Redox Targeting of Prussian Blue for High-Eenergy-Density Redox-Flow Lithium Batteries

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378Alkaline Organic Redox Flow Battery

Kaixiang Lin, Qing Chen, Michael P. Marshak, Michael R. Gerhardt, Louise A. Eisenach, Roy G. Gordon, Michael J. Aziz

379Cerium-Hydrogen Redox Flow Cell Optimization

Michael C Tucker, Alexandra Weiss, Adam Z Weber

380Effect of Ti(IV) Ion on Mn(III) Stability in Ti/Mn Electrolyte for Redox Flow Battery

Hirokazu Kaku, Yong-Rong Dong, Kei Hanafusa, Kiyoaki Moriuchi, Toshio Shigematsu

381Preliminary Study of a Hydrogen-Vanadium Flow Battery

Regis Paul Dowd, Andrew Ying, Trung Van Nguyen

382Anthraquinone Derivatives in Aqueous Flow Batteries

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383Transport Properties Study on Carbon Electrodes for Vanadium Redox Flow Batteries

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384Aqueous Redox Flow Batteries Based on a Nitroxyl Radical Compound

Akihiro Orita, Michael Verde, Masanori Sakai, Ying Shirley Meng

385Molecular Transport through Ion-Selective Membranes in Quinone-Based Redox Flow Batterie

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386The ARPA-E CHARGES Program: How to Get Paid for Grid Storage, and the Duty Cycles Needed to Prove Your Technology

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387Fabrication of Anion Exchange Membrane with Excellent Selectivity and Chemical Stability for Vanadium Redox Flow Batteries

Lin Zeng, Tianshou Zhao

388In-Situ Monitoring of Stress Development and Electrochemical Behaviour of Metallic Thin Film Anode Materials for Li-Ion Batteries

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389Electrochemical Synthesis of Ammonia for Large Scale Energy Storage

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390Effect of Sulfide Additives on the Discharge Characteristics of Iron Electrodes in Alkaline Batteries

Aswin K Manohar, Chenguang Yang, S. R. Narayanan

391Core-Shell Rhodium Sulfide As Catalyst for HER/HOR in HBr Solution

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392UV-Vis Spectroscopic Monitoring ofstate-of-Charge in Vanadium Flow Batteries

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393A New Cathode for Sodium Ion Batteries: Alluaudite $Na_{1.702}Fe_3(PO_4)_3$

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394Effects of Metal Additives on Electrochemical Performance and Behavior of Sodium Metal Chloride Rechargeable Battery

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395Study of Aqueous Zinc Nickel Flow Battery with High Energy Density

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396The Advantages of the Use of Porous Metal Fiber Media in Different Alloys As Gas Diffusion Layer in Various Energy Storage Systems

Davy Goossens, Kris Synhaeve, Jérémie De Baerdemaeker

397Transition and Turbulence in a Wall-Bounded Channel Flow at High Mach Number

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398(Invited) Elucidation of Lithiation Process As a Function of Structural and Chemical Transformations in Li_2MnO_3

Kristin A Persson, Yongwoo Shin

399Theory of the Manganese Disproportionation at the (100) Surface of $LiMn_2O_4$

Cong Liu, Marton Voeroes, Hakim Iddir, Roy Benedek, Larry Curtiss

400Thermophysical Properties of $LiFePO_4$: DFT+U Computations Combined with a Thermodynamically Self-Consistent (TSC) Method

Ali Seifitokaldani, Aïmen E Gheribi, Mickeal Dollé, Patrice Chartrand

401Graphite Phase Behavior during Lithium (de)Intercalation

Raymond B. Smith, Yinsheng Guo, Zhonghua Yu, Dmitri Efetov, Jungpu Wang, Philip Kim, Louis Brus, Martin Z. Bazant

402(Invited) Recent Density Functional Theory Investigations in Electrode Materials for Rechargeable Batteries

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403The Decomposition Mechanism of Crystalline Lioh on Ruthenium in Non-Aqueous Lithium-Oxygen Batteries: A First-Principles Study

Haoran Jiang, Tianshou Zhao

404Rational Design of Cathode Materials for High Rate Performance Sodium-Ion Batteries

Lee Loong Wong, Haomin Chen, Rayavarapu Prasada Rao, Stefan Adams

405The Effect of Chemical Doping on the Lithiation Processes of the Crystalline Si Anode: A First-Principles Study

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406(Invited) Critical Roles of Interface Engineering in All-Solid-State Li-Ion Batteries: Insights from First Principles Calculations

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407Elucidating the Effects of Additives on the Lipon/Electrode Interface, with a Focus on Mechanical Strain Effect

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408Using Physics-Based Models and Redox Shuttles to Investigate the Effects of FEC on Electrode Passivation

Rajiv Jaini, Thomas F Fuller

409Lithium Ion Solvation and Intercalation at Anode-Electrolyte Interface from First Principles

Mitchell T. Ong, Vincenzo Lordi, Erik W. Draeger, John E. Pask

410A DFT Study of CO_2-H_2 Co-Adsorption on Ni/YSZ(111) for Solid Oxide Fuel Cell Applications

Abdelaziz Essadek, Alberto Roldan Martinez, Nora de Leeuw

411Molecular Dynamic Study of Gadolinium-Doped Ceria and Yttria Stabilized Zirconia Grain Boundaries

Xavier Aparicio Angles, Nora H. de Leeuw

412(Invited) Phase-Field Method of Li Dendrite Formation during Electrodeposition

Lei Chen, Zhe Liu, Yue Qi, Peng Lu, Long-Qing Chen

413Real-Time Dynamic Simulation of Electrochemical Battery Models for Grid Applications

Seong Beom Lee, Manan Pathak, Wenzhong Gao, Vilayanur Viswanathan, Venkat Subramanian

414Multiscale Computational Approaches for the Simulation of Battery Electrodes Fabrication

Alejandro A. Franco, Garima Shukla, Mathieu Morcrette, Sebastien Cavalaglio

415Smoothed Boundary Method Simulations of Electrochemical Impedance Spectroscopy for Energy Materials with Complex Microstructures

Hui-Chia Yu, Min-Ju Choe, Yet-Ming Chiang, Glenn G Amatucci, Katsuyo Thornton

416The State of Charge of Electrodes and Its Effects on Lithium-Iron-Phosphate Battery Simulation

Hsuan-Han Huang, Wei-Lun Chung, Kuo-Chi Liao, Ching-Fei Lee, Jhen-Yang Tien, Hsun-Yi Chen

417Image-Based Reconstruction and Statistical Characterization of Li-Ion Battery Electrode Microstructures

Rajib Mukherjee, Aashutosh Mistry, Partha P. Mukherjee

418Parameter Characterization for a Li-Ion Cell with Blended Cathode

Meng Guo, Eric Carlson, Rick Chamberlain

419Mesoscale Modeling of Lithium-Ion Battery Electrodes: Computational Requirements and the Role of Polymeric Binders

Scott A. Roberts, Bradley L. Trembacki, Hector Mendoza, Kevin N. Long, Victor E. Brunini, Anne M. Grillet

420Microstructure Morphology-Performance Relations in Porous Rechargeable Batteries

Lucas Darby Robinson, R. Edwin García

421Modeling Battery Performance Due to Intercalation Driven Volume Change in Porous Electrodes

Taylor Reed Garrick, Yiling Dai, Kenneth Higa, Venkat Srinivasan, John W. Weidner

422Estimating and Identifying Parameters from Charge-Discharge Curves of Lithium-Ion Batteries

Yanbo Qi, Seong Beom Lee, Daniel T. Schwartz, Shriram Santhanagopalan, Venkat Subramanian

423Influence of Different Charge Protocols on Diffusion-Induced Stress within Electrode Particles

Je-Feng Lee, Yang-Shan Lin, Kuo-Ching Chen

424Energetically Stable LiMn2O4 Surface Structure and Its Equilibrium Shape

Soo Kim, Chris Wolverton

425Modeling and Simulation of Thermal Runaway in Cylindrical 18650 Lithium-Ion Batteries

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426Population Balance Model of Lithium Ion Batteries

Amir Abbas Tahmasbi, Thomas Kadyk, Michael Eikerling

4273D Simulation on the Internal Distributed Properties of Lithium-Ionbattery with Planar Tabbed Configuration

Yun Cheng, Jie Li, Ming Jia, Shuanglong Du

428Computer Modelling Studies of Lithium Transport in Nanoporous and Bulk Beta-MnO_2

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429The Redox Potential and Chemical Stability of Li7P3S11 Using VASP Calculation

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430First Principles Investigation of the Delithiation Process in Li_2S

Jack Postlewaite, Zachary Wawrzyniakowski, Ying Ma

431Ab Initio Modeling of Li/Li_6PS_5Cl Interface Formation in Lithium Solid State Batteries

Tao Cheng, Boris V Merinov, Boris Kozinsky, William A Goddard

432(Invited) High-Throughput DFT Thermochemistry Applied to the Design of Cathode Coatings Forlithium-Ion Batteries

Chris Wolverton

433Doping Strategies to Enhance the Na^+ Conductivity of the Cubic Na_3PS_4 Superionic Conductor

Zhuoying Zhu, Iek-Heng Chu, Zhi Deng, Shyue Ping Ong

434A New Approach to Distinguish Between Calendar Ageing and Cycling-Induced Ageing of Li-Ion Batteries

Peter Notten, Dongjiang Li, Dmitry Danilov, Yong Yang

435Deformation of Lithium Ion Battery Under Mechanical Loading

Abhishek Kumar, Srikanth Allu, Sergiy Kalnaus, Damien Lebrun-Grandie, Srdjan Simunovic, John A Turner, Hsin Wang

436Modeling Co-Extruded Cathodes for High Energy Lithium-Ion Batteries

Corie Lynn Cobb

437(Invited) Comparative First Principles Studies of Hybrid Li-Ion/Li-Oxygen Battery Materials

Liang Li, Alper Kinaci, Maria K. Y. Chan

438Thermodynamic Database Development and Simulation of Novel Intermetallic Anode Materials for Improved Li-Ion Batteries

Damian Marlon Cupid, Dajian Li, Thomas Ludwig Reichmann, Siegfried Fuertauer, Alexander Beutl, Hans Jürgen Seifert, Hans Flandorfer

439A Combined First-Principles and Experimental Investigation of the $Li_7P_3S_{11}$ Superionic Conductor

Iek-Heng Chu, Han Nguyen, Yuh-Chieh Lin, Zhenbin Wang, Zihan Xu, Sunny Hy, Zhi Deng, Shirley Ying Meng, Shyue Ping Ong

440Experimental Validation of Surface Coverage Model for Li-Air Battery

Hao Yuan, Yun Wang

441Advanced Modeling of New Batteries

Yun Wang

442(Invited) Swelling and Elastic Deformation of Lithium-Silicon Electrode Materials

Daniel R Baker, Mark W Verbrugge, Allan F Bower

443Two-Dimensional Thermal Model of Lithium Ion Battery Cell Based on Electrothermal Impedance Spectroscopy

Maciej Swierczynski, Daniel Ioan Stroe, Vaclav Knap, Søren Knudsen Kær, Remus Teodorescu

444Numerical Analysis on Lithiation and Delithiation Kinetics of Composite Silicon-Graphite Electrodes

Lei Cao, Chuanbo Yang, Gi-Heon Kim

445Modeling of Thermal Runaway-Induced Li-Ion Battery Failure Integrating Multiphysics and Multiscale Approaches As Well As Ageing Interaction

Sara Abada, Martin Petit, Amandine Lecocq, François Huet, Valérie Sauvant-Moynot, Guy Marlair

446Web Based Nano-Materials Design Platform for Li Ion Battery

Kwang-Ryeol Lee, Min-Ho Lee, Sang Soo Han

447Chemical Composition and Formation Reactions in the Cathode-Electrolyte Interface Layer of Lithium Manganese Oxide Batteries from Reactive Force Field (ReaxFF) Molecular Dynamics

Sahithya Reddivari, Christian Lastoskie

448A Simulation Framework for Battery Safety Modeling

James Marcicki, Alexander Bartlett, Xiao Guang Yang, Valentina Mejia, Min Zhu, Yijung Chen, Pierre L'Eplattenier, Inaki Caldichoury

449GC-MS Headspace and Comparative Computational Studies in the Formation and Follow-up Reactions of Nucleophiles in Li-Ion Battery Electrolytes

Stephen E. Burkhardt, Mark Roelofs, Edward Davis, Ivan Milas

450Novel Method for Using Force in Incremental Capacity Analysis for Capacity Fading Estimation

Nassim Abdul Samad, Youngki Kim, Jason B Siegel, Anna G Stefanopoulou

451Electrical Current Oscillations in Lower-Dimensional Battery Electrodes

Hidenori Yamada, Prabhakar R Bandaru

452Formation Mechanisms and Thermodynamic Stability of Domain Structure in Partially (de)Lithiated Olivine Nanoparticles

Liang Hong, Ming Tang

453Control and State of Charge Estimation of Lithium-Ion Battery Stacks

Manan Pathak, Dayaram Sonawane, Venkat Subramanian

454The Interactions Between Chlorides and Zn(001) Surfaces in Zinc/Bromine Flow Battery Electrolytes

Gobinath Pillai Rajarathnam, Alejandro Montoya, Anthony Vassallo

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Battery/Energy Technology/Industrial Electrochemistry and Electrochemical Engineering

455(Invited) Impacts of Environmental Stress Factors on Li-Ion Battery Safety Margins

Thomas Paul Barrera, Glen M Brown

456(Invited) New Li Ion Cells with Extended Temperature Range

Chengsong Ma, Jean-Paul Peres

457Safety Appraisal of Lithium Bis(fluorosulfonyl) Imide (LiFSI) As Electrolyte Salt for Li-Ion Batteries

Sylvie Grugeon, Gebrekidan Gebresilassie Eshetu, Jean-Pierre Bertrand, Grégory Gachot, Amandine Lecocq, Coralie Forestier, Lucas Sannier, Michel Armand, Guy Marlair, Stéphane Laruelle

458Experimental Analysis of Thermal Runaway in 18650 Cylindrical Li-Ion Cells Using an Accelerating Rate Calorimeter

Boxia Lei, Carlos Ziebert, Wenjiao Zhao, Andreas Markus Melcher, Magnus Rohde, Hans Jürgen Seifert

459Safety Testing in Lithium Ion Cells Comparing Thermally Stable Nanofiber-Based Separators to Traditional Polyolefin Separators

Brian Morin, James Kaschmitter, Pavel Khokhlov, Carl Hu

460The Effects of High G Impacts on Li-Ion Batteries

Nasrin Shahed Khah, Gregory James Offer, Yatish Patel, Rohit Bhagat, Richard Dashwood

461 New Understanding of Energy Distributions Exhibited during Thermal Runaway of Commercial Lithium Ion Batteries used for Human Spaceflight Applications

Sandeep Yayathi, William Q. Walker, Daniel Doughty, Haleh Ardebili

462 An Electrochemical Impedance Spectroscopy Study on a Lithium Sulfur Pouch Cell

Daniel Ioan Stroe, Vaclav Knap, Maciej Swierczynski, Tiberiu Stanciu, Erik Schaltz, Remus Teodorescu

463 A Combined Aging and Abuse Study of Li-Ion Cells

Daniel Juarez Robles, Chien-Fan Chen, Judith A. Jeevarajan, Partha P. Mukherjee

464 In-Situ Scanning Electron Microscopy Observation of Lithium Dendrite Growth on Carbon Electrodes

Ching-Yen Tang, Shen J. Dillon

465 (Invited) Aqueous Interphase Enables Safe, Green and Low Cost Li-Ion Chemistry

Liumin Suo, Oleg Borodin, Chunsheng Wang, Kang Xu

466 (Invited) Investigations into the Chemical Role of Additives in Li-Ion Cells

David S Hall, Remi Petibon, Leah Ellis, Stephen Glazier, Julian Self, Mengyun Nie, Lenaic Madec, Ang Xiao, William M Lamanna, Kiah Smith, Jeff R Dahn

467 Optimizing and Improving the Sodium Ion Conductivity of Nasicon

Adam G Jolley, Daniel D Taylor, Eric D. Wachsman

468 Lithium Plating: Root Cause, Post-Mortem Characterization, and Key Parameters to Exclude It in Automotive Applications

Thomas Waldmann, Bjoern-Ingo Hogg, Michael Kasper, Margret Wohlfahrt-Mehrens

469 Investigation of Li Source Influence on the Sinterability of Garnet-Type Solid Electrolyte $Li_{6.25}Al_{0.25}La_3Zr_2O_{12}$

Mao Shoji, Takashi Narushima, Takeshi Kimura, Hirokazu Munakata, Kiyoshi Kanamura

470 Solid Electrolyte Interphase Formation and Failure Mechanisms in Lithium Ion Batteries: In Situ and in Operado AFM Imaging

Ravi Kumar, Anton Tokranov, Zhuangqun Huang, Chunzeng Li, Xingcheng Xiao, Thomas Mueller, Brian W. Sheldon

471 Solid State Li Ion Batteries with Monocarba-Closo-Decaborate Solid Electrolytes

Nicholas Ware, Wang Si Tang, Terrence John Udovic, Farid El Gabaly, Vitalie Stavila, Albert Alec Talin

472 Solvation and Solid Electrolyte Interphases in Sodium Ion Batteries

Arthur v. Cresce, Selena M Russell, Joshua L. Allen, Reginald Rogers, Kang Xu, Jing Peng, Mallory Gobet, Steven Greenbaum

473 (Science for Solving Society's Problems Challenge Grant Winner) Powerpad: Non-Toxic Capillary-Based Flow Battery for Single Use Applications

Juan Pablo Esquivel, Perla Alday, Omar Ibrahim, Erik Kjeang, Neus Sabate

474 (Invited) Can Basic Research in Academia Predict Battery Field Failures?

Judith A Jeevarajan

475 (Invited) Dry Electrode Process Technology

Hieu Duong, Arek Suszko, Haim Feigenbaum

476 An Active Li-Mn-O Compound for High Energy Density Li-Ion Batteries

Melanie Freire, Nina V. Kosova, Christian Jordy, Daniel Chateigner, Oleg Lebedev, Antoine Maignan, Valerie Pralong

477Molecular Basis of Active Material-Blocking By Intrinsically Microporous Polymer Membranes in All-Organic Flow Batteries

Brett A. Helms, Ashleigh L. Ward, Peter D. Frischmann, Etienne Chenard, Christo S. Sevov, Nagarjuna Gavvalapalli, Artem Baskin, David Prendergast, Melanie Sanford, Jeffrey S Moore

478Solar Rechargeable Redox Battery Based on Polysulfide Electrochemistry

Mohammad Ali Mahmoudzadeh, Ashwin R Usgaocar, Joseph Giorgio, David L Officer, Gordon G Wallace, John D. W. Madden

479Positive and Negative Potassium-Ion Electrodes' Behavior in Non-Aqueous Electrolytes

Christoph Vaalma, Daniel Buchholz, Stefano Passerini

480Nitrogen-Doped Graphene/Sulfur Composite As Cathode Material for Room-Temperature Sodium-Sulfur Battery Application

Yong Hao, Xifei Li, Chunlei Wang

481Structure and Electrochemical Properties of $Na_{0.44}MnO_2$ As Positive Electrode Material in Sodium Ion Battery

Tran Van Man, Nguyen Le Thanh Huynh, Van Hoang Nguyen, LE My Loan Phung

482Morphology/Properties Correlations in TiO_2 Nanostructured Material As Negative Electrodes in Sodium Ion Batteries

Riccardo Ruffo, Gianluca Longoni, Claudio Maria Mari, Rosita Lisetta Pena Cabrera, Massimiliano Darienzo

483Investigation of Nano Carbon Materials with Incorporation of Catalyst As Air-Cathode Materials for Sodium-Air Batteries

James J. Wu, Zhenmeng Peng

484(Invited) Low Cost Zn-LMO Aqueous Battery for Large-Scale Energy Storage Systems (ESS)

Yongsheng Guo, Yisong Su, Chengdu Liang

485(Invited) Metal Hydride-Air Batteries for Large-Scale Energy Storage Systems

Ratnakumar V Bugga, Brent Fultz, Dan Addison

486Catalytic Deposition of ZnO on Bi_2O_3 Surface Towards Prolonged Zn-Based Aqueous Rechargeable Battery

Jaewook Shin, Rajan Kumar, Jung-Min You, Joseph Wang, Ying Shirley Meng

487A Full Prussian Blue Cell Containing a Hexacyanomanganate(II/I) Anode and a Cosolvent Electrolyte

Colin Deane Wessells, Wanli Yang, Ruimin Qiao, L. Andrew Wray

488Returning to Zinc to Meet the Challenges for Next-Generation Energy Storage

Joseph F. Parker, Christopher N. Chervin, Jeffrey W. Long, Eric S. Nelson, Debra R. Rolison

489Half-Cell Electrochemical Performance and Cost-Benefit Analysis of Utilizing Hybrid Ionic Liquids in Zinc/Bromine Flow Batteries

Gobinath Pillai Rajarathnam, Anthony Vassallo

490Calcium Hydroxide Membrane As a Separator to Immobilize Zincate Ions in Secondary Alkaline Batteries

Jinchao Huang, Gautam Ganapati Yadav, Joshua W Gallaway, MIchael Nyce, Sanjoy Banerjee

491Operation System for Aluminum-Air Cell: A Strategy to Harvest the Energy from Low-Cost Aluminium

Binbin Chen, Yiu Cheong Leung

492(Invited) Advantages of the Chloride-Containing All Vanadium Redox Flow Battery System

Liyu Li

493(Invited) Unveiling the Mechanism of Magnesium Battery Cathode

Chen Ling

494Redox-Active Organic Molecule As High Performance Cathode Material for Non-Aqueous Rechargeable Magnesium-Ion Batteries

Baofei Pan, John T. Vaughey, Zhengcheng Zhang, Anthony K. Burrell, Chen Liao

495A Rocking-Chair-Type Magnesium Hybrid Supercapacitor

Hyun Deog Yoo, Sang-Don Han, Ryan D Bayliss, Andrew A. Gewirth, Bostjan Genorio, Anthony K. Burrell, Jordi Cabana

496Two-Dimensional Layered Materials with Expanded Interlayer Distance for Rechargeable Magnesium Batteries

Yifei Li, Yanliang Liang, Yan Yao

497Peanut Shell Hybrid Sodium Ion Capacitor with Extreme Energy - Power Rivals Lithium Ion Capacitors

David Mitlin

498Development of Stable Organic Redox Shuttles for Applications in Lithium Ion Batteries

Thomas F. Guarr, Nicholas Mortimer, Amber J. Prins, Robert Polik

499Ionic Liquid Electrolytes for Rechargeable Aluminum Batteries

Huali Wang, Gao Liu, Ying Bai, Chuan Wu, Shi Chen, Feng Wu, Min Ling

500Iron Containing Li-Rich Materials Ashigh Energy Cathodes for Li-Ion Batteries

Aiswarya Bhaskar, Ditty Dixon, Sylvio Indris, Michael Knapp, Natalia Bramnik, Helmut Ehrenberg

501New Iron-Based Polyanion Compounds As Low-Cost Cathode Materials for Rechargeable Alkali-Ion Batteries

Amitava Choudhury, Hooman Yaghoobnejad Asl

502Aqueous Carbon Suspensions for Electrochemical Applications

Guillaume Muller, Xavier Petrissans, Domitille Giaume, Christel Laberty-Robert, Philippe Barboux

503Unveiling the Dynamic Capacitive Storage Mechanism of Co_3O_4 @$NiCo_2O_4$ Hybrid Nanoelectrodes for Supercapacitor Applications

Yonghe Li, Yuefei Zhang, Yujie Li, Zhenyu Wang, Haoyu Fu, Yanhui Chen, Hongzhou Zhang, Xiaodong Li

504Vanadium Sulfate As New Electrode Material for Na Ion Batteries

Valerie Pralong, Muthaiyan Gnanavel, Vincent Caignaert, Bernard Raveau, Oleg Lebedev

505Lithium Biphenyl-3,3',4,4'-Tetracarboxylate Based Anode Material for Li and Na-Ion Battery Application

Medabalmi Veerababu, U V Varadaraju, Kothandaraman Ramanujam

506Desulfation and Cycle-Life Improvement of Lead-Antimony Alloyed Lead-Acid Batteries through Periodic Inverse-Charging

Constantine Spanos, Aditya Jayan, Sarah Berlinger, Alan C West

507Self-Sacrifice Template Formation of Hollow Hetero-Ni_7S_6/Co_3S_4 Nanoboxes with Intriguing Pseudo-Capacitance for High-Performance Supercapacitors

Hui Hua, Qiuliu Chen, Zhiyi Chen, Linrui Hou, Changzhou Yuan

508Effect of Morphology on the Electrochemical Properties of Lithium Titanate Anode Materials

Jianling Li

509Flexible and Stretchable Lithium Ion Batteries Based on Solid Polymer Nanocomposite Electrolyte

Mejdi Kammoun

510Electrochemical Properties of $Li_3V_2(PO_4)_3$/C Cathode Materials Prepared Via Sol-Gel Process

Seung-Woo Choi, Min-Young Kim, Seung-Hoon Yang, Da-Hye Kim, Tae-Hyoung Noh, Ho-Sung Kim, Moo Sung Lee

511Electrochemical Characteristics of Garnet-Llzo Materials Doping By Chemical Elements for All Solid Lithium Batteries

Seung-Hoon Yang, Min-Young Kim, Da-Hye Kim, Kyeong-Joon Kim, Seung-Woo Choi, Tae-Hyoung Noh, Ho-Sung Kim, Moo Sung Lee

512Novel D-Glucose Derived Hard Carbon Anode for Sodium-Ion Batteries

Ronald Väli, Tauno Tooming, Thomas Thomberg, Alar Jänes, Enn Lust

513The Development of High Capacity V-Based BCC Electrodes for Aqueous Metal Hydride Air Systems

Nicholas Weadock, Heng Yang, Hongjin Tan, Brent Fultz, Ratnakumar V Bugga

514The Roles and Characterizations of Activated Carbon in Printed Air Cathode for Flexible Zinc-Air Battery

Soorathep Kheawhom, Sira Suren

515Multiprobe and Multiscale Characterization of SEI Developing on Nano-Silicon Electrodes in a Full-Cell Setup By Using NMR, STEM-Eels, XPS and FIB-TOF-SIMS

Eric De Vito, Nicolas Dupré, Philippe Moreau, Lucille Quazuguel, Maxime Boniface, Arnaud Bordes, Christian Rudisch, Pascale Bayle-Guillemaud, Dominique Guyomard

516Discharge Behavior of Si-Air Batteries with Aqueous Electrolyte

Y. Emre Durmus, Steffen Alexander Kayser, Özgür Aslanbas, Hermann Tempel, L.G.J. de Haart, Josef Granwehr, Hans Kungl, Rüdiger-Albrecht Eichel

517Polyimide Derivative As Electrolyte Additive to Improve Electrical Performance and Safety in Lithium-Ion Batteries

Max Yu-hao Chang, Peter Po-jen Chu

518Organic Vs. Inorganic Cations of Alkali-Metal Halides Containing Ionic Liquids for Sodium-Ion Battery Applications

Telpriore Gregory Tucker, Charles Austen Angell

519Silver Modified MnO_2 As an Electro-Catalyst for Oxygen Reduction Reaction in Alkaline Fuel-Cell and Battery Applications

Samgopiraj Velraj, Kevin Beverage, Yuxuan Wang, Zhe-Fei Li, Gerardine G Botte

520Impact of Carbon Coating on the Electrochemical Property of Li_2MnSiO_4/C Cathode Material By Sol-Gel Method

Pin-Han Wang, Chien-Min Chang, Ching-Feng Lee, Hwang-Sheng Chen, Yui Whei Chen-Yang

521Electrochemical Studies of Halogens at Carbon Graphite Electrode in Aqueous Solutions

Diego Fernando Quintero Pulido, Marnix Victor Ten Kortenaar, Johann Hurink, Gerard Smit

522Tuning Ionic Clusters in Sulfide Glass-Ceramics for Superior Solid-State Electrolytes

Hyoungchul Kim, Soo-Young Cho, Yoon-Sung Lee, Hun-Gi Jung, Jong-Ho Lee, Hae-Weon Lee

523Formation of $LiCoO_2$ / Li_3BO_3 Composite Cathode on Al Doped $Li_7La_3Zr_2O_{12}$ Solid-State Electrolyte By Aerosol Deposition Method

Takeshi Kimura, Kyoko Kozuka, Naoto Saito, Mao Shoji, Takashi Narushima, Hirokazu Munakata, Kiyoshi Kanamura

524Fast Pulse Combustion Process for Producing Lithium-Ion Cathode Materials

Gregor Krizan, Janez Krizan, Robert Dominko, Miran Gaberscek

525Membranes for Aqueous All Vanadium Redox Flow Battery

Barbara Mecheri, Diana De Porcellinis, Mario Branchi, Silvia Licoccia, Alessandra D'Epifanio

526A Vanadium Redox Flow Battery for Hydrogen Production

Hubert Girault

527A Versatile Measuring Setup for the Electrochemical Characterization of Materials Developed for Energy Storage Devices

Ritesh Vyas, Michael Kubicsko, Benedikt Huber, Marcel Drüschler

528Advanced Alkaline MnO2-Zn Batteries: Accessing the Second Electron Capacity

Gautam Ganapati Yadav, Joshua W Gallaway, MIchael Nyce, Sanjoy Banerjee

529Low-Cost Organic Redox Materials for Safe Energy Storage

Yan Yao, Yanliang Liang, Yan Jing, Saman Gheytani, Kuan-Yi Lee

530 Study of Electrodeposited Zinc Morphology in Rechargeable Alkaline Batteries

Xia Wei, Alexander Couzis, Sanjoy Banerjee

531 Aqueous Ion Intercalation in Hydrous Oxides

William Lo, Ruocun Wang, Veronica Augustyn

532 Novel Inorganic Coatings for Li_2s Cathodes

Ulises Medina

533 Thin Film Li-Ion Microbatteries Using Self-Supported Titania Nanotubes

Thierry Djenizian

534 Multiple Edge in Situ X-Ray Absorption Spectroscopy (XAS) Investigations of Fe Substituted Li-Rich Cathode Materials for Libs

Ditty Dixon, Aiswarya Bhaskar, Stefan Mangold, Helmut Ehrenberg

535 Improvement of Zinc Anode for Flexible Printed Zinc Air Batteries with High Energy Density

Soorathep Kheawhom, Sira Suren

536 Flexible and Stretchable Supercapacitors from Carbon Materials

Yihao Zhou, Changyong Cao, Stephen Ubnoske, Philemon A. Henry, Charles B. Parker, Aaron Franklin, Jeffrey T. Glass

537 Biomass-Derived Activated Graphene for Electrochemical Capacitors

SungHoon Jung, TaeYoung Kim

538Transparent and Flexible Energy Storage Using Pseudocapacitive $Ni(OH)_2$ coated Cu Nanowires By Solution-Processes

James O. Thostenson, Isvar A. Cordova, Ian E. Stewart, Jason J. Amsden, Charles B. Parker, Jie Liu, Benjamin J. Wiley, Jeffrey T. Glass

539Highly Soluble, Sometimes Liquid, Electron-Donating Phenothiazines for Batteries with Non-Aqueous Electrolytes

Susan A Odom, Matthew D Casselman, Aman Preet Kaur, Corrine F Elliott, Steven Chapman, Peter Zhang, Chad Risko

540Functionalization of Carbon with Manganese Oxide for Enhanced Wettability and Capacitance in Neutral Aqueous Electrolyte

Simranjit Grewal, Brandon Read, Min Hwan Lee

B01-Carbon Nanostructures for Energy Conversion

Nanocarbons/Energy Technology/Physical and Analytical Electrochemistry

541(Invited) A Highly Durable Polymer Electrolyte Fuel Cell Catalyst Based on Double-Polymer-Coated Carbon Nanotubes

Naotoshi Nakashima, Tsuyohiko Fujigaya

542Synthesis and Characterization of Graphene/Carbon Nanotubes-Supported Platinum Nanoparticles in PEM Fuel Cell Oxygen Reduction Reactions

Emeline Remy, Frédéric Fouda-Onana, Marie Heitzmann, Yohann Thomas, Pierre-André Jacques

543Synthesis and Electrocatalytic Activity of Nitrogen and Phosphorus Co-Doped Graphene for Oxygen Reduction

Ruizhi Yang, Jiao Wu, Xiangjun Zheng, Na Zhang

544An Overview of Carbon Nanomaterials in Solid Acid Fuel Cell Electrodes

Aron Varga, Bernd Abel, Olga Naumov, Lu Xubin, Felix Lohmann, Patricia Schulze, Maximilian Wagner

545Evaluation of Pt-Au/MWCNT Electrocatalyst Performance As Cathode of a Proton Exchange Membrane Fuel Cell

Mara Beltrán-Gastélum, Moises Israel Salazar-Gastelum, Rosa María Félix-Navarro, Sergio Pérez-Sicairos, Edgar Alonso Reynoso-Soto, Shui Wai Lin-Ho, Roberto Flores-Hernández, Tatiana Romero-Castañón, Irma Lorena Albarrán-Sánchez, Francisco Paraguay-Delgado

546Preparation of High Loading Pt Nanoparticles on Multiwalled Carbon Nanotubes By Electrodeposition Method Applied for the Anode of Proton Exchange Membrane Fuel Cells

Sin Yi Hu, Tsung-Kuang Yeh, Mei-Ya Wang

547Preparation of High Performance Polymer Electrolyte Membrane Fuel Cells (PEMFC): Graphene As a Carbon Support

Doriane Del Frari, Hongtao Long, Joffrey Didierjean, Marc Michel

548Polydopamine for the Design of Corrosion-Tolerant Polymer Electrolyte Membrane Fuel Cell Electrodes

Joffrey Didierjean, Hongtao Long, Doriane Del Frari, Marc Michel

549In Situ Synthesis of Meso-Porous Manganese Oxides/Sulfur-Doped Graphene Sheets Hybrid As a Highly Active Bifunctional Catalyst for Oxygen Evolution and Reduction Reactions

Yang Gao

550Incorporation of Pyridinium Axial Ligands for Fe Phthalocyanines Anchorage on Carbon Nanotubes Electrodes for Biomimetic Oxygen Reduction

Maria Paz Oyarzun, Nataly Silva, Juan Francisco Silva, Sara Ramirez, Jose H Zagal

551Electrocatalytic Activity of Graphene Oxide: Mediating Electron Transfer Between Two Redox Couples

Prashant V Kamat, Victoria Bridewell

552(Invited) Carbon Nanotube/Polymer Hole Transporting Layers Bring Enhanced Performance to Perovskite, Quantum Dot and Organic Photovoltaic Devices

Robin john Nicholas, Severin Habisreutinger, Henry Snaith, Andrew Watt, J. Joseph Sharkey

553(Invited) Carbon Nanotube Network As Stable and Efficient Electron Blocking Layer and Transparent Conductive Electrodes for Solar Cells

Shigeo Maruyama, Kehang Cui, Il Jeon, Takaaki Chiba, Rong Xiang, Shohei Chiashi, Esko Kauppinen, Yutaka Matsuo

554(Invited) Charge Separation and Recombination at Single-Walled Carbon Nanotube Photovoltaic Interfaces

Jeffrey L. Blackburn, Andrew John Ferguson, Obadiah Reid, Rachelle Ihly, Anne-Marie Dowgiallo, Philip Schulz, Mengjin Yang, Kai Zhu, Joseph Berry

555(Invited) A Carbon-Carbon Hybrid Immobilizing Carbon Nanodots and Carbon Nanotubes

Dirk M. Gudi

556(Invited) Influence of Purity and Processing on Freestanding SWCNT Nanosheets and Nanotube-Silicon Heterojunctions

Erik K. Hobbie

557(Invited) Application of Carbon Nanotubes in CdTe Photovoltaics

Rajendra R. Khanal, Adam B. Phillips, Geethika K. Liyanage, Suneth C. Wathage, Zhaoning Song, Jonathan M. Stone, Michael J. Heben

558(Invited) Carbon Nanotubes: Towards an Advanced Material for Energy and Electronic Applications

Benjamin S Flavel

559Hybrid Nanomaterials Composed of N-Doped Fullerene/Transition Metal Complex Polymer and P-Doped Conjugated Organic Polymers

Krzysztof Winkler, Ewa Brancewicz, Monika Wysocka-Zolopa

560(Invited) Insight into Carbon Nanotube Surface Structures for PV Applications

Stephen K. Doorn, Nicolai F. Hartmann, Navaneetha K Subbaiyan, Rajib Pramanik, Arun Tej Mallajosyula, Aditya Mohite, Anne-Marie Dowgiallo, Jeffrey L. Blackburn

561(Invited) Completely Organic Carbon Nanostructured Thermoelectric Thin Films with Power Factors Exceeding Bismuth Telluride

Jaime Grunlan, Choongho Yu, Chungyeon Cho, Gregory Moriarty

562(Invited) Thermoelectric Properties of Semiconducting Single-Walled Carbon Nanotube Networks

Andrew John Ferguson, Azure D. Avery, Brenna Norton-Baker, Ben Zhou, Jounghee Lee, Eui-Sup Lee, Elisa M. Miller, Rachelle Ihly, Devin Wesenberg, Kevin S. Mistry, Sarah Lucienne Guillot, Barry L. Zink, Yong-Hyun Kim, Jeffrey L. Blackburn

563N-Doping of Single-Walled Carbon Nanotubes and Their Thermoelectric Property

Tsuyohiko Fujigaya, Wenxin Huang, Yuki Nakashima, Naotoshi Nakashima

564An Effective Solution-Phase Dopant for Generating Thin Films of Single Walled Carbon Nanotubes with Varying P-Type Conductivity

Noah J. Stanton, Rachelle Ihly, Brenna Norton-Baker, Andrew John Ferguson, Jeffrey L. Blackburn

565(Invited) Electrochemical Capacitors Based on Graphene

Barbara Katherine Hughes, Wade A. Braunecker, Justin C. Johnson, Rachelle Ihly, Thomas Gennett

574Modification of Hierarchical CNT Honeycomb Structures with Fe_2O_3 for Li-Ion Battery Anodes

Sarah Jessl, Davor Copic, Michael F. L. De Volder

575Graphdiyne for High Capacity and Long-Life Lithium Storage

Changshui Huang

576Preparations of Turpentine Based Carbon Nanospheres As Anode Materials for Lithium Ion Batteries

Arenst Andreas Arie, Inez Devina Konstantia, Martin Halim, Joong-Kee Lee

577Surface Electrochemical Degradation Characterization of Carbon Fibers in Aqueous Electrolytes

Zahra Heydarzadeh Sheykhangafsheh, Yun Wang

578Influence of Nanostructured Carbon Supports on Nanocatalysts Towards Electrooxidation of Formic Acid for Direct Formic Acid Fuel Cells

Tamanna Ferdous Shanta, Wujian Miao

579Tuning Single-Walled Carbon Nanotube (SWCNT) Membrane Interactions

Alessandra Antonucci, Nils Schuergers, Ardemis Anoush Boghossian

580Producing Supercapacitor Wire Electrode Via a Simple Self-Assembly Technology

Wilson Hou-Sheng Huang

581Searching for Fullerene Electron Conductors for Perovskite Solar Cells

Su-Yuan Xie

582Preparation of Graphene/N-Doped Carbon Nanowire Composites for an Effective Electrocatalyst for the Oxygen Reduction Reaction

Firoz Babu Kadumudi, Won Mook Choi

583Highly Efficient Graphene Supports for Fuel Cell Electrocatalysts

Veera Sadhu, Esaam Jamil, Selmiye Alkan Gursel

584Platinum-Tin Alloy/Reduced Graphene Oxide Nanohybrid for a Highly Efficient Counter Electrode in Dye-Sensitized Solar Cell

Ik-Kyu Jin, Van-Duong Dao, Liudmila L. Larina, Ho-Suk Choi

585Platinum-Cobalt Alloy/Reduced Graphene Oxide Nanohybrid Counter Electrode for Dye-Sensitized Solar Cells

Seok-Woo Yoon, Van-Duong Dao, Liudmila L. Larina, Ho-Suk Choi

586Optimum Alloying of Bimetallic Platinum-Gold Nanoparticles Used As an Efficient and Robust Counter Electrode Material of Dye-Sensitized Solar Cells

Ji-Soo Kim, Van-Duong Dao, Liudmila L. Larina, Ho-Suk Choi

587Three-Dimensional Porous Carbon Materials with High Surface Area for Electrochemical Energy Storage

Jae Hee Han, Tae-Ho Kim, Byoung Gak Kim, Young Taik Hong

588High Hydrophilic Mesoporous Carbon As Support of Pd Electrocatalyst for Ethanol Oxidation

Guoqing Zhang

589Precious-Metal-Free Carbon Nano Fiber with N-Doped Graphene Nanoplatelets As Electrocatalyst for Oxygen Reduction Reaction

Seonyoung Yoo, Jeeyoung Shin, Guntae Kim

590Effect of Edge-Carboxylation in Graphene Nanoplatelets on the Performance of Electrochemical Energy Storage

Narayan Chandra Deb Nath, Jae Joon Lee

B02-Carbon Nanostructures in Medicine and Biology

Nanocarbons

591(Invited) Spectral Triangulation: A Novel 3D Method for Locating Single-Walled Carbon Nanotubes In Vivo

Ching-Wei Lin, R. Bruce Weisman, Sergei M. Bachilo, Michael Vu, Kathleen M. Beckingham

592(Invited) Deep Tissue Fluorescence Imaging in the Second Near-Infrared Window (NIR-II Window) Using Carbon Nanotubes

Guosong Hong, Shuo Diao, Hongjie Dai

593Carbon Nanotube Photoluminescence Modulation for Bioanalytical Measurements

Daniel A Heller, Prakrit Vaibhav Jena, Daniel Roxbury, Januka Budhathoki-Uprety, Ryan M. Williams, Yosef Shamay, Janki Shah, Jackson Dean Harvey, Christopher Horoszko, Rachel E Langenbacher, Thomas Vito Galassi

594(Invited) Wrapped up in Nanotubes: Probing Photoluminescence Dynamics of Wrapped Single-Walled Carbon Nanotubes (SWCNTs)

Ardemis Anoush Boghossian

595Imaging and Spectroscopy of Carbon Nanotube Optical Reporters to Probe Biological Environments

Prakrit Vaibhav Jena, Daniel Roxbury, Thomas Vito Galassi, Christopher Horoszko, Januka Budhathoki-Uprety, Jackson Dean Harvey, Daniel A Heller

596(Invited) In Vivo Carbon Nanotube Sensors

Nicole M Iverson, Gili Bisker, Edgardo Farias, Vsevolod Ivanov, Jiyoung Ahn, Paul W Barone, Mia Shandell, Laura J Trudel, Selda Sen, Fatih Sen, Esha Atolia, Gerald N Wogan, Michael S Strano

597Photoluminescent Carbon Nanotubes Interrogate the Permeability of Multicellular Tumor Spheroids

Yosef Shamay, Prakrit Vaibhav Jena, Janki Shah, Daniel Roxbury, Navid Paknejad, Daniel A Heller

598Raman Imaging of Cells Using Antibody-Derived Carbon Nanotubes Nanoprobes

Rafaella Oliveira Nascimento, Nathalie Tang, Charlotte Allard, Minh Nguyen, Mirela Birlea, Louis Gaboury, Richard Martel

599Single-Walled Carbon Nanotubes (SWCNTs) for Protein Engineering Applications

Shang-Jung Wu, Vitalijs Zubkovs, Ardemis Anoush Boghossian

600Single-Walled Carbon Nanotubes for the Quantification of Biomarkers in Biofluids

Jackson Dean Harvey, Hanan Baker, Xinghuo Li, Prakrit Vaibhav Jena, Daniel A Heller

601Engineering Graphene for Neural Sensing and Stimulation Applications

Hongming Lyu, Yichen Lu, Duygu Kuzum

602(Invited) Differential Sub-Cellular Processing of Single-Wall Carbon Nanotubes Via Interfacial Modification

Mohammad F. Islam

603(Invited) Multiphoton Imaging of Carbon-Based Nanomaterials

Stuart J. Corr, Steven A. Curley, Lon J. Wilson

604Sub-Cellular Localization of Photoluminescent Single-Walled Carbon Nanotubes in Human Cancer Cells

Januka Budhathoki-Uprety, Rachel E Langenbacher, Prakrit Vaibhav Jena, Daniel Roxbury, Daniel A Heller

605Engineering Smart Wrappings for Next Generation Single-Walled Carbon Nanotube (SWCNT) Sensors

Justyna Kupis-Rozmyslowicz, Vitalijs Zubkovs, Sudharshan Ravi, Ardemis Anoush Boghossian

606Carbon Microelectrodes for Real Time Osteoporosis Drug Screenings

Claudia Caviglia, Gaetano Panagia, Suhith Hemanth, Yasmin Mohamed Hassan, Stephan Sylvest Keller

607Biomarker Detection By Single-Walled Carbon Nanotube Optical Bandgap Modulation

Ryan M. Williams, Christopher Lee, Thomas Vito Galassi, Jackson Harvey, Maria Sirenko, Janki Shah, Daniel A Heller

608Probing DNA Conformational Changes in Real Time Using Single-Molecule Electronic Sensors Based on Carbon Nanotube Field-Effect Transistors

Delphine Bouilly, Jason Hon, Nathan S. Daly, Scott Trocchia, Sefi Vernick, Steven Warren, Kenneth L. Shepard, Ruben L. Gonzalez, Colin Nuckolls

609(Invited) Single-Walled Carbon Nanotubes As Multimodal Agents for Biological Imaging and Drug Delivery

Anton V Naumov, Olga Gliko, Michelle Weiss, R. Bruce Weisman, Lynn Kirkpatrick

610Carbon Nanotubes for Theranostics

Agnieszka Gajewska, Jose Miguel Gonzalez Dominguez, Tatiana DaRos

611(Invited) Non-Covalent Functionalization of Single Wall Carbon Nanotubes with Engineered Proteins for Targeted Subcellular Delivery

Kris Noel Dahl

612PET Imaging of Tumor Uptake of a Biocompatible C_{60} Fullerene Drug Delivery Vector

Nicholas G. Zaibaq, Michael J. Collins, Stuart J. Corr, Steven A. Curley, Lon J. Wilson

613Digitonin Dispersed Carbon Nanotubes to Remove Cholesterol from Serum

Stefanie L. Baker, Kris Noel Dahl, Mohammad F. Islam

614(Invited) Sugar/Nanocarbon Hybrids As Multivalent Inhibitors of Artificial Ebola Virus Infection

Nazario Martin, Beatriz Illescas, Antonio Muñoz

615Targeting Type-I Eicosacationic [70]Fullerene-(Light Harvesting Antenna) PDI Agents for Efficient Photokilling of Multiantibiotics-Resistant Bacteria

Min Wang, Yingying Huang, Michael Hamblin, Long Chiang

616Antibacterial Mechanisms of Nano-Graphene Oxide By Measuring Membrane Interactions

Sarah M. Robb, Maxwell Li, Kris Noel Dahl, Mohammad F. Islam

617Synthesis of Red Fluorescent Graphene Quantum Dots for the Bioimaging Platform

Louzhen Fan

618Well-Defined Water-Soluble C_{60}-PVP Conjugate

Elisha Gabrielle V. Tiu, Safwan Aroua, Yoko Yamakoshi

619Labeling and Tracking Stem Cells By X-Ray Imaging Using a Hybrid Bismuth/Carbon Nanotube Contrast Agent

Mayra Hernández-Rivera, Ish Kumar, Stephen Younglae Cho, Kenton H. Whitmire, Maria da Graça Cabreira-Hansen, Lon J. Wilson

620(Invited) Carbon Nanotubes and Cellular Perturbation: Augmentation of Differentiation Dynamics in Neural Stem Cells

Sabrina Jedlicka, Massooma Pirbhai, Slava V. Rotkin

621Pyrolized 3D Carbon Scaffolds and Electrical Stimulation Enhance Differentiation of Neurons

Alexandra Perebikovsky, Marc J Madou

622SU-8-Derived Carbon Nanopillars Enhance Stem Cell Differentiation into Dopaminergic Neurons

Ada-Ioana Bunea, Letizia Amato, Andrea Casci Ceccacci, Stephan Sylvest Keller, Niels Bent Larsen, Arto Heiskanen, Jenny Emnéus

623Non-Destructive Detection of Metabolites Using Single Walled Carbon Nanotubes

Thomas Vito Galassi, Janki Shah, Prakrit Vaibhav Jena, Daniel Roxbury, Christopher Peter Horoszko, Daniel A Heller

624Electrochemical and Spectroelectrochemical Determination of Stress Biomarker Isatin on Optically Transparent Boron-Doped Diamond Electrodes

Michal Sobaszek, Pawel Niedzialkowski, Robert Bogdanowicz, Greg M Swain

625Examining the Sub-Cellular Localization of Single-Walled Carbon Nanotubes

Rachel E Langenbacher, Januka Budhathoki-Uprety, Daniel Roxbury, Prakrit Vaibhav Jena, Daniel A Heller

B03-Carbon Nanotubes - From Fundamentals to Devices

Nanocarbons/Physical and Analytical Electrochemistry

626(Invited) Toward Selective Synthesis of Carbon Nanotubes: Paradoxes and Perspectives

Avetik R Harutyunyan

627(Invited) Revisited Roles of Bimetallic Catalysts for Controlled CVD Growth of Single-Walled Carbon Nanotubes

Shigeo Maruyama, Rong Xiang, Hua An, Yang Qian, Kehang Cui, Akihito Kumamoto, Taiki Inoue, Shohei Chiashi, Yuichi Ikuhara

628(Invited) Growth of Single-Walled Carbon Nanotubes with Specific Structure

Yan Li, Feng Yang

629(Invited) Resolution of Carbon Nanotube Enantiomers By DNA

Ming Zheng

630Selective Desorption of Multiple High-Purity SWCNT Fractions from Hydrogels through Co-Surfactant Modulation

Yang Zhao, Justin Clar, Luping Li, Jia Xu, Tianyu Yuan, Jean-Claude J Bonzongo, Kirk J Ziegler

631(Invited) Application of Aqueous Two-Phase Partitioning Towards Total Structure Control of Single-Wall Carbon Nanotube Dispersed Populations

Jeffrey A. Fagan

632(Invited) Chirality-Dependent Surfactant Interactions Unravelled By Systematic Ultracentrifugal and Aqueous Two-Phase Separations

Sofie Cambre, Joeri Defillet, Wim Wenseleers

633(Invited) Formation of Thermodynamically-Stable Surfactant Structures Around Single Wall Carbon Nanotubes

Yang Zhao, Justin Clar, Jia Xu, Jean-Claude J Bonzongo, Kirk J Ziegler

634Raman Spectroscopic Evidence of the Selective Extraction of Metallic SWNTs By Polymethyl(1-undecylic acidyl)Silane

Jinling Gao, Yao Huang, Yongfu Lian

635Design and Synthesis of Mwcnts Discrete 3D Microparticles for the Organized Assembly of High Performance Materials

Laura Maggini, Michael F. L. De Volder

636(Invited) Pristine Electronics Grade Semiconducting Carbon Nanotubes By Switching the Rigidity of the Wrapping Polymer Backbone

Padma Gopalan, Yongho Joo, Gerald J Brady, Matthew J Shea, Michael S. Arnold

637(Invited) Porphyrin/Carbon Nanotube Supramolecular Self-Assembly : A Thermodynamical Approach

Géraud Delport, Fabien Vialla, Stephane Campidelli, Christophe Voisin, Jean-Sébastien Lauret

638Fullerene-Assisted Quenching of Single-Walled Carbon Nanotubes Photoluminescence through a Flavin-Helix

Fotios Papadimitrakopoulos, Mehdi Mollahoseini, Erandika Karunaratne, Jose Gascon

639Rotaxanes Meet Carbon Nanotubes. Synthesis and Physical Properties of Mechanically Interlocked Derivatives of Carbon Nanotubes

Emilio M Perez

640(Invited) Stability and Reliability of Carbon Nanotube Thin-Film Circuits

Mark C. Hersam

641 Carbon Nanotube Array Field Effect Transistors with High Current Density and on/Off Ratio

Gerald J Brady, Austin J Way, Robert M Jaccoberger, Yongho Joo, Padma Gopalan, Michael S. Arnold

642 Superconducting Properties in Tantalum Decorated Three-Dimensional Graphene and Carbon Structures

Wei Pan

643 (Invited) Figure of Merit for Carbon Nanotube Photothermoelectric Detectors

François Léonard

644 Stretchable Carbon Nanotube Transistors Enabled By Buckled Carbon Nanotube Thins Films, Ion Gel Gate Dielectrics, and Metal Electrodes

Meng-Yin Wu, Juan Zhao, Feng Xu, Michael S. Arnold

645 Printed Carbon Nanotube Gas Sensor Arrays

David Eric Schwartz, Clinton Smith, Yong Zhang, Gabriel Iftime, Gregory Whiting, Ion Matei, Meyya Meyyappan, Beomseok Kim

646 Real-Time Catalytic Activity of Bimetallic Ru-Pt Nanoparticles Attached on Carbon Nanotube Electronic Devices

Delphine Bouilly, Béatrice Vanhorenbeke, Jason Hon, Colin Nuckolls, Sophie Hermans, Richard Martel

647 (Invited) Chemistry, Electronic Structure, Properties and Applications of Carbon Nanotubes and Graphene

Robert C Haddon

648 (Invited) Fluorescent Quantum Defects in Carbon Nanotubes

YuHuang Wang

649(Invited) Bulk Synthesis of Oxygen-Doped Single-Walled Carbon Nanotubes and Their Application As Fluorescent Probes

Toshiya Okazaki

650Aromatic Molecular Dimer on Single-Walled Carbon Nanotubes

Jinseok Baek, Tomokazu Umeyama, Hiroshi Imahori

651(Invited) Chiral, Semiconducting Polymer-Wrapped Single-Walled Carbon Nanotube Superstructures for Opto-Electronic Applications

Jean-Hubert Olivier, Jaehong Park, Pravas Deria, Mary Glesner, Yusong Bai, George Bullad, Michael J. Therien

652Photoinduced Spontaneous Free-Carrier Generation of (7,5)-Chirality-Enriched Single-Walled Carbon Nanotubes in a Low Dielectric Solvent

Garry Rumbles, Jaehong Park, Obadiah Reid, Jeffrey L. Blackburn

653(Invited) Photoluminescence Relaxation Dynamics of Covalently Doped Carbon Nanotubes

Stephen K. Doorn, Nicolai F. Hartmann, Kirill Velizhanin, Xuedan Ma, Han Htoon, Jean-Hubert Olivier, Michael J. Therien, Mijin Kim, YuHuang Wang

654Determination of Redox Potentials of Oxygen-Doped Single-Walled Carbon Nanotubes Based on in Situ Photoluminescence Electrochemistry

Naotoshi Nakashima, Tomonari Shiraishi, Gergely Juhász, Tomohiro Shiraki, Yuhei Miyauchi, Kazunari Matsuda

655(Invited) A Carbon Nanotube Based Single Photon Source

Adrien Jeantet, Yannick Chassagneux, Jean-Sébastien Lauret, Jakob Reichel, Christophe Voisin

656Functionalised Carbon Nanotubes As Components in Solid Acid Fuel Cell Electrodes

Olga Naumov, Felix Lohmann, Bernd Abel, Aron Varga

657Degradation of Carbon Nanomaterials Using Electrochemical Oxidation on BDD Electrodes

Vytas Reipa, Elijah Petersen, Shannon Hanna, John Elliott

658Applying the Ionic Field-Effect Photoluminescence of Semiconducting Carbon Nanotubes for Circuit-Free Electroanalytics

Christopher Peter Horoszko, Prakrit Vaibhav Jena, Daniel Roxbury, Slava V. Rotkin, Richard Martel, Daniel A Heller

659Synthesis and Characterization of Carbon Nanotubes to be Used in the Development of New Ionizing Radiation Sensors

Carlos Neira, Carmen Morant, Teresa Campo, Eduardo Elizalde, Francisco Márquez, Luis López, José J Duconge

660Impedance-Based Characterization of Functional Carbon Nano-Tube/Cement Composites

Ki-Won Seo, Yoo-Jin Choi, Jin-Soo Kim, Eui-Hyun Kim, Jinha Hwang

661Photoluminescence from Thin Carbon Nanotube Films

Imge Namal, Friedrich Schoeppler, Tobias Hertel

662(Invited) Spectral Characteristics of Cryogenic Carbon Nanotubes

Alexander Högele

663Angular Emission Properties of Single-Wall Carbon Nanotubes and Individual Covalent Dopant Sites

Nicolai F. Hartmann, Xuedan Ma, Han Htoon, Stephen K. Doorn

664(Invited) Using Variance Spectroscopy to Measure Single-Walled Carbon Nanotube Absorption Cross Sections

R. Bruce Weisman, Stephen R. Sanchez, Sergei M. Bachilo, Yara Kadria-Vili, Ching-Wei Lin

665(Invited) Cell Membrane Proteins Modulate the Carbon Nanotube Optical Bandgap Via Surface Charge Accumulation

Daniel Roxbury, Prakrit Vaibhav Jena, Yosef Shamay, Christopher Horoszko, Daniel A Heller

666(Invited) Single Carbon Nanotube Tracking Reveal Nanoscale Dimensions of Living Tissue Structuration

Laurent Cognet

667Carbon Nanotube Photoluminescence for Bioelectroanalytical Measurements

Daniel A Heller, Daniel Roxbury, Prakrit Vaibhav Jena, Januka Budhathoki-Uprety, Ryan M. Williams, Yosef Shamay, Janki Shah, Jackson Dean Harvey, Christopher Horoszko, Rachel E Langenbacher, Thomas Vito Galassi

668(Invited) Transport and Emission Properties of Polymer-Sorted Monochiral and Mixed Carbon Nanotube Networks

Jana Zaumseil

669(Invited) Cavity Enhanced Light Emission from Electrically Driven Carbon Nanotubes

Ralph Krupke

670(Invited) Physics and Applications of Spontaneously Aligned Macroscopic Nanotube Assemblies

Weilu Gao, Xiaowei He, Ahmed Zubair, Natsumi Komatsu, Cheng Guo, Lijuan Xie, Junichiro Kono

671(Invited) All-Electronic Sensing of Single Molecule Dynamics Using Carbon Nanotube Devices

Philip G. Collins

672(Invited) Photocurrent Spectroscopy of Exciton and Free Particle Optical Transitions in Suspended Carbon Nanotube Pn-Junctions

Stephen B. Cronin

673(Invited) Nanotubes for DNA Conformation Sensing

Slava V. Rotkin

674Advanced Spectral Analysis for Characterizing Single-Walled Carbon Nanotube Samples

R. Bruce Weisman, Sergei M. Bachilo, Yara Kadria-Vili

675Intensity Ratio of Resonant Raman Modes for (n,m) Enriched Semiconducting Carbon Nanotubes

Yanmei Piao, Jeffrey R Simpson, Jason K. Streit, Geyou Ao, Ming Zheng, Jeffrey A. Fagan, Angela R. Hight Walker

676(Invited) Interaction of Molecules with Single-Walled Carbon Nanotube Probed By Photoluminescence and Raman Spectroscopy

Yoshikazu Homma

677Alkane Filled Single-Wall Carbon Nanotubes: Endohedral Volume Control for Improved Nanotube Properties

Jochen Campo, Yanmei Piao, Stephanie Lam, Jason K. Streit, Angela R. Hight Walker, Jeffrey A. Fagan

678(Invited) Evidence for Strong Electronic Correlations and Band-Gap Renormalization in Doped Single-Wall Carbon Nanotubes

Tobias Hertel, Holger Hartleb, Florian Spaeth, Klaus Eckstein, Melanie Achsnich, Friedrich Schoeppler

679(Invited) Exciton Dissociation and Trion Generation in Individual Carbon Nanotubes

Yuichiro K. Kato

680Trion Dynamics in Hole-Doped (6,5) Single-Wall Carbon Nanotube Films

Klaus Eckstein, Roman Ickert, Pascal Kunkel, Friedrich Schoeppler, Tobias Hertel

B04-Endofullerenes and Carbon Nanocapsules

Nanocarbons

681(Invited) New Vistas on Chemistry of Endohedral Metallofullerenes

Takeshi Akasaka, Michio Yamada, Hiroki Kurihara, Mitsuaki Suzuki, Jing-Dong Guo, Marilyn M. Olmstead, Alan L. Balch, Shigeru Nagase, Yutaka Maeda, Xing Lu

682(Invited) Novel Fullerenes and Their Photovoltaic Properties

Su-Yuan Xie, Jun Xiao

683(Invited) Preparation of [60]Fulleropyrrolidines and Their Photovoltaic Applications

Lai Feng, Yi Zhou

684(Invited) Anisotropic Magnetism of an Endohedral Metallofullerene for Molecular Location Sensor

Yuta Takano, Ryo Tashita, Mitsuaki Suzuki, Hiroshi Imahori, Shigeru Nagase, Takeshi Akasaka

685(Invited) Regioselective Bis-Prato Addition on TNT-EMF ($M_3N@I_h$-C_{80}, M = Y, Gd) Controlled By Endohedral Metal Cluster

Yoko Yamakoshi, Safwan Aroua

686(Invited) 1,3-Dipolar Cycloadditions on Endohedral Fullerenes M3N@I_h-C_{80} (M = Sc-Gd): Remarkable Endohedral-Cluster Regiochemical Control

Sílvia Osuna, Marc Garcia-Borràs, Yoko Yamakoshi, Luis Echegoyen

687Actinide Metallic Endohedral Fullerenes: Synthesis of Th@C_{2n} and U@C_{2n}(n=36-50) and the Electrochemical Properties of Th@C_{82} and U@C_{82}

Yaofeng Wang, Ning Chen

688Experimental and Theoretical Investigation on the Structures and Relative Reactivity of Pr@C_{74} and Pr@C_{74}($C_6H_3Cl_2$)

Yanli Zhao, Haitao Yu, Yongfu Lian

689(Invited) A Highly Efficient and Tumor Vascular-Targetingtherapeutic Technique with Size-Expansiblegadofullerene Nanocrystals

Chunru Wang

690(Invited) The Adaptive Structure of Carbon Nanohybrids Toward High-Relaxivity for the New MRI Contrast Agent

Bao yun Sun, Rongli Cui

691(Invited) Organic Functionalization of Lithium-Ion-Endohedral Fullerenes

Yutaka Matsuo

692(Invited) Isolation and Structure Determination of La@C_{70}(CF_3)$_3$

Shinobu Aoyagi, Zhiyong Wang, Haruka Omachi, Ryo Kitaura, Hisanori Shinohara

693(Invited) The Regioselectivity of the Diels-Alder and Bingel-Hirsch Additions to La@C_{2v}-C_{82}

Miquel Solà, Juan Pablo Martínez, Marc Garcia-Borràs, Marcel Swart, Jordi Poater, F. Matthias Bickelhaupt, Josep Maria Luis, Sílvia Osuna

694(Invited) New Endohedral Fullerene Compounds and Derivatives

Luis Echegoyen

695(Invited) Unprecedented Aromatic Ring Scissoring Observed in the Reaction of $Sc_3n@I_h$-C_{80} with Aryl Azides

Guan-Wu Wang

696(Invited) Structural Studies of Metal-Fullerene Interactions from Ouside to Inside

Amineh Aghabali, Marilyn M. Olmstead, Alan L. Balch

697(Invited) Stabilization of Giant Fullerene Cages By Encapsulation of Large Metallic Clusters

Xing Lu

698(Invited) Self-Assembly of Endohedral Metallofullerenes: A Decisive Role of Cooling Gas and Metal-Carbon Bonding

Alexey A. Popov, Qingming Deng, Stephan Irle

699(Invited) Butterfly inside Carbon Cage: Preparation, Structural Characterization and Chemical Properties of Novel Dimetallic Oxide Cluster Fullerenes

Ning Chen, Lai Feng

700(Invited) Entrapping a Group-VB Transition Metal, Vanadium, within an Endohedral Metallofullerene

Shangfeng Yang

701(Invited) Electronic and Structural Properties of New Endohedral Metallofullerenes

Josep M. Poblet, Roser Morales, Antonio Rodríguez-Fortea, Skie Fortier, David Buck, Luis Echegoyen

702(Invited) Chemical Purification of M_3N Clusters in the Larger C_{88}-C_{102} Cage

Steven Stevenson

703(Invited) Aromaticity, Cage Structure, and Relative Abundancy of Endohedral Metallofullerenes

Josep M Luis, Marc Garcia-Borràs, Sílvia Osuna, Miquel Solà

704(Invited) Controlling the Dipolar Coupling in Endohedral Fullerene-Phthalocyanine Dyads

Kyriakos Porfyrakis

705(Invited) Graphene Nanoribbons through Directed Molecular Assembly and Stitching

Robert Jordan, Yue Wang, Saeed I. Khan, Richard B. Kaner, Yves Rubin

706(Invited) Regioselective Thiolation of Perchlorinated Graphene

Yuanzhi Tan

707(Invited) Aligning Organic Dipolar Molecules in Carbon Nanotubes for Nonlinear Optics

Sofie Cambre, Jochen Campo, Charlie Beirnaert, Christof C. Verlackt, Wim Wenseleers

708(Invited) Near Infrared Photoluminescence of Endohedral Metallofullerenes

Toshiya Okazaki

709(Invited) Water-Dimer Encapsulations into C84

Zdenek Slanina, Shigeru Nagase, Takeshi Akasaka, Xing Lu

B05-Fullerenes - Chemical Functionalization, Electron Transfer, and Theory

Nanocarbons

710(Invited) Prisitine C_{60} and C_{70} fullerenes As Electron Transport Materials for Perovskite Solar Cells

Juan Luis Delgado

711(Invited) On the Way to Molecular Building Blocks for Next Gen OPV

Jan Hummelen

712(Invited) The Effect of Increased Dielectric Screening on Bimolecular Recombination of Photogenerated Charges in Polymer:Fullerene Bulk Heterojunctions

Attila Janos Mozer, Tracey M Clarke, Guanran Zhang

713(Invited) Synthesis and Photoswitching Tunability of GHz Dielectric Property at e-Polarizable [60]Fullerosomic Surface of Hybrid Core-Shell Nanoparticles

Long Chiang, Min Wang, Tzuyang Yu, Loon-Seng Tan, Augustine Urbas

714(Invited) Sumanene: A C3-Symmetric Fragment Structure of C60

Hidehiro Sakurai

715(Invited) Controlled Assembly of C_{60} Using Supramolecular Scaffolds

Takanori Fukushima

716(Invited) Supramolecular-Driven Formation of an Elusive Phthalocyanine-C_{60} Fullerene Bisadduct Triad

Tomas Torres, Giovanni Bottari, Olga Trukhina, Dirk M. Guldi, Axel Kahnt, Luis-Manuel Mateo, Giulia Lavarda

717(Invited) Synthesis of Nitrogen-Embedded Buckybowl and Its Strong Association Behavior with C_{60}

Satoru Hiroto, Hiroki Yokoi, Daisuke Sakamaki, Shu Seki, Hiroshi Shinokubo

718(Invited) Synthesis of Fluorescent Graphene Quantum Dots

Takeharu Haino

719(Invited) Selective Synthesis of Photoelectrochemical Active Co_8S_{15} Cluster inside the Bowl-Shaped Templating Pentaorgano[60]Fullerene Ligand

Yutaka Matsuo

720(Invited) The Regioselectivity of Bingel-Hirsch Cycloadditions on IPR Endohedral Metallofullerenes

Marc Garcia-Borràs, Sílvia Osuna, Josep M Luis, Luis Echegoyen, Miquel Solà

721(Invited) Polyarylations of Heterofullerenes

Andreas Hirsch

722(Invited) Distorted Aromatics and Their Related 1D and 2D Materials

Aurelio Mateo-Alonso

723(Invited) Electrochemical Synthesis of Multiadducts from [60]Fulleroindolines

Guan-Wu Wang

724(Invited) Photoinduced Electron-Transfer Dynamics of a Monoprotonated Saddle-Distorted Porphyrin

Takahiko Kojima, Wataru Suzuki, Hiroaki Kotani, Tomoya Ishizuka, Kei Ohkubo, Shunichi Fukuzumi

725(Invited) Photoinduced Charge Transfer Reactions and Excited State Properties in Triphenylamine C_{60} Donor-Acceptor Conjugates

Miquel Solà, Juan Pablo Martínez, Sílvia Osuna, Alexander Voityuk

726(Invited) Synthesis and Photophysical Properties of Porphyrin-Fullerene Linked Dyads with a Oligo-p-Xylene Bridge

Hiroshi Imahori

727(Invited) Fullerenes for Catalysis: C_{60} As Molecular Vector in Hydrogen Transfer Reactions

Nazario Martin, Salvatore Filippone, Sara Vidal, Juan Marco-Martínez

728(Invited) Long-Lived Charge Separated States Exclusively from the Triplet Excited States in Palladium Porphyrin-Fullerene Conjugates

Francis D'Souza, Christopher Obondi, Brittani Churchill, Gary N. Lim, Prashanth Poddutoori, Art van der Est

729(Invited) Fullerene-Based Multichromophoric Antennas

Davide Bonifazi

730(Invited) Switchable Electron Transfer Reactivity in Phthalocyanine $Sc_3n@C_{80}$ Supramolecular Ensembles

Olga Trukhina, Tomas Torres, Giovanni Bottari, Dirk M. Guldi, Luis Echegoyen, Marc Rudolf, Takeshi Akasaka, Veronica Almeida, Nicolas Muñoz

731(Invited) C_{70} As a Photocatalyst for Oxidation of Benzylamines to Imines

Rakesh Kumar, Yoko Yamakoshi

732(Invited) Polypeptides/C_{60} Complexes and Their Applications

Nathalie Solladie

733(Invited) Decorating Nanocarbons with Perylenediimide Systems

Ángela Sastre-Santos, Sara Pla, Luis Martin-Gomis, Fernando Fernández-Lázaro

734(Invited) Carbon Nanotubes-Fullerene Hybrids

Fernando Langa, María J. Gomez-Escalonilla, Myriam Barrejon

735Cancer Hyperthermia Studies: On the Aqueous Structure and Radiofrequency-Induced Heating Properties of a Water-Soluble [60]Fullerene

Yuri Mackeyev, Atsushi Muto, Matthew Cheney, Rita Serda, Steven A. Curley, Lon J. Wilson

736Backside Anti-Reflecting Absorbing Layer Microscopy for in Situ Graphene Imaging and Modification

Stephane Campidelli, Renaud Cornut, Vincent Derycke, Dominique Ausserré

737(Invited) Charge Generation in Bulk-Heterojunctions Based on Fullerene Heterodimers

Vladimir Dyakonov, Andreas Sperlich, Oleg G. Poluektov, Jens Niklas, Juan Luis Delgado, Nazario Martin

738(Invited) Concave Host Molecules Containing Phosphorus Atoms for Fullerenes

Masaki Yamamura, Tatsuya Nabeshima

739(Invited) Exohedral Functionalization of Fullerenes: New Insights from Computational Studies

Antonio Rodríguez-Fortea, Laura Abella, Antonio Moreno, Josep M. Poblet

740(Invited) Tailoring Graphene for Spintronics

Rodolfo Miranda

741(Invited) Bi-thermoelectricity in Fullerene-based Molecular Junctions

Nicolás Agraït, Laura Rincón-García, Charalambos Evangeli

742(Invited) Helical Polymer Wrapped C_{70}-Fluorene Triadds As Ultrafast Nonlinear Photoresponsive Materials

Min Wang, Seaho Jeon, Loon-Seng Tan, Thomas Cooper, Long Chiang

B06-Graphene and Beyond: 2D Materials

Nanocarbons/Dielectric Science and Technology/Physical and Analytical Electrochemistry

743(Invited) Transition Metal Dichalcogenides: Growth and Characterization

Ludwig Bartels

744(Invited) Towards Large Scale Growth of Two-Dimensional Transition Metal Dichalcogenides

Jeffrey C Grossman, Nicola Ferralis

745Synthesis of Graphene on Electrochemical Nickel for MEMS Industry

Lorenzo Pedrazzetti, Roberto Bernasconi, Andrea Lucotti, Peiman Soltani, Alessio Mezzi, Saulius Kaciulis, Luca Nobili, Luca Magagnin

746(Invited) Synthesis and Growth of the Phosphorene Precursor Black Phosphorus

Tom Nilges, Marianne Köpf, Carolin Grotz, Daniela Pfister

747(Invited) The Effect of Degradation on the Wetting Properties of Exfoliated Black Phosphorus

Alexandre Favron, Patricia Moraille, Étienne Gaufrès, Anne-Laurence Phaneuf, Pierre Lévesque, Sebastien Francoeur, Richard Leonelli, Richard Martel

748(Nanocarbons Division SES Young Investigator Award) Making Graphene Resist Aggregation

Jiayan Luo

749(Invited) 2D Transport and Velocity Modulation in Black Phosphorus Field Effect Transistors

Thomas Szkopek, Guillaume Gervais, Nicholas Hemsworth, Vahid Tayari

750(Invited) Topological Winding Number Change and Broken Inversion Symmetry in a Hofstadter's Butterfly

Marc Bockrath

751Electric Field Effects on Electronic Property at Silicene-Amine Interface

Kenji Iida, Masashi Noda, Katsuyuki Nobusada

752(Invited) Physics of Electronic Transport in Low-Dimensionality Materials for Future FETs

Massimo V Fischetti

753Peculiar Magnetic Properties in Doped and Edge Functionalized Silicene Nanoribbons

Sadegh Mehdi Aghaei, Md Monirojjaman Monshi, Irene Calizo

754(Invited) Chemically Modified Two-Dimensional Nanoelectronic Heterostructures

Mark C. Hersam

755(Invited) Temperature, Magnetic Field, and Dimensionality Effects on the Raman Spectra of $TaSe_2$

Angela R. Hight Walker, Jeffrey R Simpson, Sugata Chowdhury

756Raman Spectroscopy of Graphene Molecules: Size Dependent and Reaction Time Studies

Enkeleda Dervishi, Zhiqiang Ji, Nicolai F. Hartmann, Milan Sykora, Stephen K. Doorn

757(Invited) Electrostatically Tunable Graphene Metasurfaces for Controlling Mid-IR Radiation

Victor Watson Brar

758(Invited) New Photocurrent Generating Pathways in Twisted Bilayer Graphene and Stacked Transition Metal Dichalcogenide Materials

Matt W Graham

759Electrochemical Property of Platinum Supported on Thiol-Attached Reduced Graphene Oxide Composite Electrode for Fuel Cells

Seok Kim, Sung Sang Kwon, Joo Hyeong Woo, Yongju Jung

760Study on Electrochemical Analysis of Supercapacitor Electrodes Containing Modified Reduced Graphene Oxide and Titanium Dioxide

Seok Kim, Eun-saem Jo, Hoeseung Kim, Yongju Jung

761Insight into the Nanoscale Mechanism of Exceptional H2O Transport in Graphene Oxide Membrane

Shuai Ban

762Synthesis and Characterization of Graphene Flakes to be Used in the Development of Electrodes for Li-Ion Batteries

Francisco Díaz, Teresa Campo, María Cotto, Francisco Márquez, Carmen Morant, Eduardo Elizalde

763Shear Assisted Electrochemical Exfoliation of Graphite Tographene

Dhanraj Shinde

764Controlled Growth of Graphene on Porous Silicon

Daohan Ge, Dongliang Qian, Guanggui Chen

765 Synthesis of Clustered Mn_3O_4 Nanoparticles through a Polymer Surfactant Mediated Route on Few-Layer Exfoliated Graphene Platelet Surface and Its Application for Electrochemical Energy Storage: Lithium-Ion Battery Anode

Debkumar Saha, Lawrence T. Drzal

766 Photoelectronic Effects with Graphene Channels Interfaced with Quantum Dots Arrays

Xin Miao, Samarth Trivedi, Haim Grebel

767 Band Gap Tuning of Germanene Nanoribbon Using Chemical Functionalization

Md Monirojjaman Monshi, Sadegh Mehdi Aghaei, Irene Calizo

768 Molecular Dynamics Analysis of Graphene-Based Nanoelectromechanical Switch

Eunae Lee, Jeong Won Kang

769 Kolbe Electrochemistry in Reversible Wavefunction Engineering of Epitaxial Graphene

Santanu Sarkar

770 Cytotoxicity of Graphene Derivatives and Exfoliated Transition-Metal Dichalcogenides (MoS_2, WS_2, and WSe_2)

Wei Zhe Teo, Elaine Lay Khim Chng, Zdeněk Sofer, Martin Pumera

771 Graphene Oxide Nanocomposites for Supercapacitor Electrodes

Pranav Bhagwan Pawar, Sumit Saxena, Siddhartha Suman, Shobha Shukla

772 Graphene and Graphene Oxide in Low Temperature Fuel Cells for Enhanced Performance.

Stuart Martin Holmes, Prabhuraj Balakrishnan

773Enzymatic Glucose Biofuel CELL Based on Graphene

Samira Bagheri

774Electrochemical Water Treatment Using Graphene, Graphene Foam and Graphene / Metal Oxide Composites

Edward Roberts, Farbod Sharif, Luke Gagnon

775Low Cost Fabrication of Graphene Oxide Films As Efficient Counter Electrode for Dye-Sensitized Solar Cells (DSSC)

Kishore Kumar Devarepally

776(Invited) Graphene and "Beyond" Graphene-Enabled Bio-Nano Hybrids for Programmable Chemical Detection

a T Charlie Johnson

777Impact of Hydrogen on Carrier Mobility and Concentration in Graphene Decorated with Pd Nanoparticles

Akihito Goto, Go Takeuchi, Ryosuke Yamachi, Takahisa Tanaka, Tsunaki Takahashi, Ken Uchida

778(Invited) Graphene and Graphene-Analogue Aerogels: Synthesis and Applications

Marcus A. Worsley

779Covalent Functionalization of Graphene on Surfaces and in Solution

Andreas Hirsch

780Understanding the Binding Mechanism for Catalysis and Energy Storage

Yuanyue Liu, Brandon Wood, Jun Lou, Pulickel M Ajayan, Boris I. Yakobson, William A Goddard

781(Invited) Functionalization of Graphene By Oxo-Addents As Performance Boost

Siegfried Eigler

782Chemical Functionalization of N-Doped Graphene

Fernando Langa, María J. Gomez-Escalonilla, Myriam Barrejon, Ana Primo, Hermenegildo García

783(Invited) Chiral Graphene Quantum Dots

Mikiko Vázquez-Nakagawa, Laura Rodríguez-Pérez, Maria Ángeles Herranz, Nazario Martín

784Synthesis of Large Area Graphene Flakes with Low Defect Density Using the Electrochemical Exfoliation Technique

Afkham Mir, Anupam Shukla

785(Invited) Chalcogenide Glasses for Planar Devices

Spencer Novak, Pao-Tai Lin, Cheng Li, Laura Sisken, Weiwei Deng, Juejun Hu, Anuradha Agarwal, Kathleen A Richardson

786The P- and N- Doping of Graphene through Specific Plasma Processing

Rajaram Narayanan, Aliaksandr Zaretski, Darren Lipomi, Prabhakar R Bandaru

B07-Inorganic/Organic Nanohybrids for Energy Conversion

Nanocarbons/Energy Technology

787(Invited) Visible-Light Responsible Ammonia Synthesis from Dinitrogen Via Plasmon-Induced Charge Separation

Tomoya Oshikiri

788(Invited) Conjugated Polymer Spherical Microcavities for Energy Conversion

Yohei Yamamoto

789(Invited) Carbon Nanotube-Templated Synthesis of Covalent Porphyrin Network for Oxygen Reduction Reaction

Stephane Campidelli, Ismail Hijazi, Tiphaine Bourgeteau, Renaud Cornut, Adina Morozan, Bruno Jousselme

790(Invited) Conjugated Polymer Nanostructures for Li-Battery

Qichun Zhang

791(Invited) Porphyrin-Capped Au Clusters As Building Blocks for Energy Conversion

Toshiharu Teranishi

792(Invited) Tri-Copper-Incorporated Carbon Catalyst for Oxygen Reduction Reaction

Ichizo Yagi, Marika Muto, Masaru Kato

793(Invited) Plasmon-Induced Deposition of Conductive Polymer on Au Nanostructured TiO_2 Electrode

Kei Murakoshi, Hiro Minamimoto, Takahiro Toda, Xiaowei Li

794(Invited) Purification of a Non-Precious Metal Oxygen Reduction Catalyst to Reveal the Active Species

Andrew A. Gewirth, Jason A. Varnell, Edmund C. M. Tse

795(Invited) Growth of Ordered ZnO Nanorods Arrays Using Anodic Porous Alumina Templates

Hideki Masuda, Toshiaki Kondo, Takashi Nakazono, Takashi Yanagishita

796(Invited) Effect of Ionomer Structure for Oxygen Reduction Reaction in Acidic Media and Fuel Cell Performance

Tsuyohiko Fujigaya, Akiyo Nagashima, Naotoshi Nakashima

797Electronic Properties of Various B-Doped Diamond(111)// Dye Molecule Interfaces

Karin Margit Eleonora Larsson

798(Invited) Artificial Photosynthesis Using All-Soild-State Photocatalysts - Photocatalytic Conversion of CO2 By H2O As an Electron Donor

Kentaro Teramura

799(Invited) Photophysics of Hybrid Semiconductor Nanostructures in Photocatalytic Hydrogen Generation

Masaru Kuno

800(Invited) Size- and Composition-Dependent Photocatalytic Activity of ZnS-$AgInS_2$ Solid Solution Nanoparticles

Tsukasa Torimoto, Yutaro Kamiya, Tatsuya Kameyama, Susumu Kuwabata

801(Invited) Photoinduced Electron Transfer Processes of Trifluorinated Molecules Dispersed in Conjugated Polymer Films and at Interfaces with Swcnts

Garry Rumbles, Jeffrey L. Blackburn, Rachelle Ihly, Obadiah Reid, Jaehong Park, Steven H. Strauss, Olga V. Boltalina, David C Coffey

802(Invited) Kinetics of Photocatalytic Multielectron Transfer By Nanoparticles of Bare or Catalyst-Loaded Titania

Bunsho Ohtani, Shugo Takeuchi, Mai Takase, Mai Takashima

803(Invited) Stable and Durable $CH_3NH_3PbI_3$ Perovskite Solar Cells at Ambient Conditions

Mahendra Kumar Sunkara, Sudesh Kumari, Venkat Kalyan Vendra, Thad Druffel, Joshua M Spurgeon, Brandon Wayne Lavery

804(Invited) Long Term Stability of Antimony Sulfide-Based Hybrid Solar Cells

Akinobu Hayakawa, Takashi Sagawa

805(Invited) Chemical Approach for Improving Perovskite Solar Cell Performance

Hiroshi Imahori

806(Invited) Control of Film Morphology, Crystal Structure and Band Energy for Perovskite Solar Cells

Eric Wei-Guang Diau, Cheng-Min Tsai, Hui-Ping Wu

807(Invited) Photovoltaic Aspects of Organic Lead Halide Perovskites

Prashant V Kamat, Joseph S Manser, Seogjoon Yoon

808(Invited) Hybrid Organic/Inorganic Bismuth-Based Materials for Solution-Processed Thin-Film Photovoltaics

David M Fabian, Shane Ardo

809(Invited) Functionalized Pi-Extendedporphyrins As Sensitizer for Dye-Sensitized Solar Cells

Hong Wang, Lei Kerr, R. G. Waruna Jinadasa, Bihong Li, Benjamin Schmitz, Alex Matus, Yi Hu

810(Invited) How Beneficial Is Reduced Graphene Oxide (RGO) for Long-Term Photo Generated Charge Transport in Inorganic Oxide - Rgo Nanocomposites? a Case Study of Bismuth Titnate - Rgo Films?

Josephine Selvaraj, Satyajit Gupta, Sebastian Fiechter, Vaidyanathan Subramanian

811(Invited) Infra-Red Photoresponse of Mesoscopic NiO-Based Solar Cells Sensitized with PbS Quantum Dot

Fabrice Odobel, Mahfoudh Raissi, Yann Pellegrin, Mohammed Boujtita

812(Invited) Insight into D-a-Pi-a Featured Organic Sensitizers

Weihong Zhu

813(Invited) Cost-Effective Anthryl Dyes for Dye-Sensitized Cells Under Dim Light

Ching-Yao Lin

814Carbon Nitride (C3N4) Photocatalysts Synthesized from Different Methods for Photocatalytic Reaction Under Visible Light Irradiation

Che-Chia Hu, Mao-Sheng Wang, Zheng-Wei Guo

815Synthesis of Bimetallic Platinum-Iron Nanoparticles As Robust and Low-Cost Counter Electrode Materials for Dye-Sensitized Solar Cells

Oleksii Omelianovych, Liudmila L. Larina, Van-Duong Dao, Ho-Suk Choi

816Hexagonal Hollow Mesoporous TiO_2 Nanoparticles As an Advanced Anode Material for Lithium-Ion Batteries

Chunrong Ma, Tao Yuan, Weimin Zhang, Zi-Feng Ma

817Development of Tin-Rich Methylammonium Halide Perovskites for Carbon-Based Solar Cells Free of Hole-Transport Materials

Cheng-Min Tsai, Eric Wei-Guang Diau

818Investigation of Graphene Oxide-TiO2 Photoelectrodes with Different Compact Layers and Counter Electrodes

Kishore Kumar Devarepally

B08-Porphyrins, Phthalocyanines, and Supramolecular Assemblies

Nanocarbons

819(Invited) Mechanisms of Branching Reactions in Melanin Formation - Ab Initio Quantum Chemistry Approach

Ryo Kishida, Hideaki Kasai

820(Invited) Electrochemistry of Nitrophenylcorroles in Nonaqueous Media

Xiaoqin Jiang, Wenqian Shan, Sandrine Pacquelet, Nicolas Desbois, Claude Gros, Karl M. Kadish

821(Invited) Phosphorus Complexes of Corrole

Roberto Paolesse, Mario Luigi Naitana, Sara Nardis, Giuseppe Pomarico, Manuela Stefanelli, Federica Mandoj

822(Invited) The Reactivity and Mechanistic Studies of Group 14 Corrole Complexes

Xuefeng Fu

823(Invited) Efficient Electrocatalysis of Oxygen Reduction with Metallo-Corroles

Lior Elbaz, Naomi Levi, Atif Mahammed, Zeev Gross

824(Invited) [30]Trithiadodecaazahexaphyrins: Synthesis and Properties

Olga Trukhina, Mikhail Islyaikin, M. Salome Rodriguez-Morgade, Tomas Torres, Eugeni Ivanov, Esmeralda Caballero

825(Invited) Metal Ion Induced Cyclization of Phenoxybilinones to 5-Oxaporphyrin Metal Complexes

Tadashi Mizutani

826(Invited) Synthesis and Structures of Free-Base [14]Tribenzotriphyrin(2.1.1) and Their Metal Complexes

Zhaoli Xue, Yemei Wang, Zhongping Ou

827(Invited) Synthesis and Properties of Antiaromatic Porphyrins

Hiroshi Shinokubo

828(Invited) Predicting the Degree of Aromaticity of Novel Porphyrinoid Compounds

Heike Fliegl

829(Invited) Synthesis and Property of Carbazole-Based Porphyrins

Chihiro Maeda

830(Invited) Design of High NIR Emissive Lanthanide Porphyrinoids

Jun-Long Zhang, Ji-Yun Hu, Ying-Ying Ning

831(Invited) Pyrrole-Based Ion-Pairing Supramolecular Assemblies

Hiromitsu Maeda

832(Invited) Porphyrins Based Gas Sensors and Their Applications

Corrado Di Natale, Roberto Paolesse

833(Invited) Switching of Single Molecule Magnetism and Conductance in Porphyrin-Based Terbium Double-Decker Complexes

Takuji Ogawa

834(Invited) Photodynamic Inactivation of Natural Environmental Biofilm Forming Microorganisms on Surfaces

Beate Roeder, Annegret Preuß, Tobias Borhuetter

835(Invited) Interactions of Antioxidant-Substituted Macrocycles

Jonathan P. Hill, Daniel Payne, Yoshitaka Matsushita, Shangbin Jin, Jan Labuta, Katsuhiko Ariga

836(Invited) Application of Ethane-Bridged Bis-Porphyrin Structural Motif for Effective Supramolecular Chirogenesis, Sensor Development, and Light Harvesting Systems

Victor Borovkov, Nicholas Gathergood

837(Invited) New Porphyrin-Based Probes for In Vivo Two-Photon Phosphorescence Lifetime Microscopy (2PLM) of Oxygen

Sergei Vinogradov, Tatiana Esipova

838(Invited) Efficient Electrocatalytic CO_2 Reduction with Dinuclear Iron Complexes

Yoshinori Naruta

839(Invited) 'totem' C2-Symmetrical Iron(III) Porphyrin Complexes to Stereoselectively Promote the Alkene Cyclopropanation

Emma Gallo, Daniela Intrieri, Daniela Maria Carminati, Lucio Toma, Stéphane Le Gac, Bernard Boitrel

840(Invited) Iron Porphyrin Alcoholate and Manganese Porphyrin Thiolate As Element-Substituted Analogs of Heme Thiolate Complex

Tsunehiko Higuchi

841(Invited) Catalytic Activity of Vitamin B_{12} under Light Irradiation

Dorota Gryko

842(Invited) Catalytic and Biocatalytic Iron Porphyrin Carbene Formation: Effects of Binding Mode, Carbene Substituent, Porphyrin Substituent, and Protein Axial Ligand

Rahul Khade, Yong Zhang

843(Invited) Self-Assembled Molecular Materials Based on Subphthalocyanines

Tomas Torres, Maria J Mayoral, Julia Guilleme, David González-Rodríguez, Giulia Lavarda, David Guzman, Diana Paola Medina, Miguel Angel Revuelta

844(Invited) Phthalocyanine Monolayer Nucleation of Gate Oxide ALD on Single Layer Graphene and TMD Surfaces

Andrew Kummel, Jun Hong Park, Iljo Kwak, Evgeniy Chagarov, Hema Movva, Harry Chou, Sanjay K Banerjee, Sara Fathipour, Alan Seabaugh, Susan Fullerton, Suresh Vishwanath, Huili Grace Xing, Pabitra Choudhury

845(Invited) Peripherally Fused Azabodipy Dimers: A New Class of Near-Infrared Fluorescence Probes

Francis D'Souza, Venugopal Bandi, Haptom B. Gobeze

846(Invited) Linear and Star-Shaped Phthalocyanine-Acceptor Systems

Angela Sastre-Santos, Jorge Follana, Desiré Molina, Vicente M. Blas-Ferrando, Javier Ortiz, Martín M. León, Fernando Fernández-Lázaro

847(Invited) Applications of the Orthogonal Reactivity for the Functionalization of the Bodipy CORE

Eduardo Peña-Cabrera, Cesar F. A. Gómez-Durán, Ismael Valois-Escamilla

848(Invited) Functionalizing P-Extended Porphyrins

Hong Wang, R. G. Waruna Jinadasa, Yuanyuan Fang, Siddhartha Kumar, Karl M. Kadish, Yi Hu

849(Invited) Self-Organization and Cross-Linking of Tetraazaporphyrin Derivatives

S. Holger Eichhorn, Elmahdy Abdulhamied, Mohamed M Ahmida, Himadri Kayal

850(Invited) Synthesis and Characterization of Photoactive Porphyrin Electropolymers

Luis Alberto Otero

851(Invited) Electrogeneration and Electrochemistry of Sigma-Bonded Cobalt Porphyrins with Pi-Extended Systems and/or Highly Electron-Withdrawing Pyrrole Substituents

Karl M. Kadish, Xiangyi Ke, Lei Cong, Ravi Kumar, Muniappan Sankar

852(Invited) Pyrrole-Based Polycyclic Pi-Electron Systems with Various Redox States

Masayoshi Takase

853(Invited) Towards Electron Transfer Compounds with Rigid Resistor Units

Mathias O. Senge

854(Invited) Carbon-Rich Porphyrins

Norbert Jux, Dominik Lungerich, Helen Hölzel, David Reger, Michael Ruppel, Max Martin

855(Invited) Effects of Sensitization Conditions on Photovoltaic and Photophysical Properties of Porphyrin-Sensitized Solar Cells

Hiroshi Imahori

856(Invited) Bodipy Dyes for Solar Energy Conversion

Hongshan He, Hafsah A Klfout, Mahmoud Elkhalifa, Adam Stewart

857(Invited) Trans-Substituted Benzodiazaporphyrin, a Hybrid Dye Between Porphyrins and Phthalocyanines, Opens Promising Performances in Dye-Sensitized Solar Cells

Fabrice Odobel, Dmitry Andrianov, Andrey Cheprakov

858(Invited) Boron Subphthalocyanines, Boron Subnaphthalocyanines and Silicon Phthalocyanines - All Very Versatile Materials for Organic Photovoltaics

Timothy P Bender

859(Invited) Dye Sensitized Solar Cell Based on Dicarboxylic Acid Substituted Benzoporphyrin and the Effect of Pi□-Linkers Towards Their Photovoltaic Performances

R. G. Waruna Jinadasa, Hong Wang, Bihong Li, Lei Kerr

860(Invited) Tetrapyrrole-Based Metal Complexes Designed for Bio-Inspired Catalysis and Solar Fuel Production

Günther Knör

861Polypeptides with Pendant Porphyrins: From the Recognition of Bidentate Bases to Inter-Digitated Photo-Active Strands

Regis Rein, Nathalie Solladie

862FRET-Based Ratiometric Detection of Metal Ions

Yongzhong Bian, Mengliang Zhu, Dongli Zhang, Wenxin Lu, Jinghui Zhang, Jianzhuang Jiang

863Synthesis and Characterization of A_2B_2 Tetrabenzoporphyrins

Siddhartha Kumar, Hong Wang

864(Invited) Photoactive Biodegradable Nanoparticles As Anti-Cancer Nanovectors

Frederique Cunin

865(Invited) Construction of Hemoprotein Assembly Via Heme-Heme Pocket Interaction and Its Photochemical Property

Takashi Hayashi, Tsuyoshi Mashima, Shota Hirayama, Koji Oohora

866(Invited) Metalation of Porphyrins on Surfaces in Liquid and Vacuum

Ole Lytken

867(Invited) Low Frequency Modes of Porphyrin Systems

Volker Schünemann

868(Invited) Molecular Mechanism of NO Reduction By Bacterial Nitric Oxide Reductases

Yoshitsugu Shiro

869(Invited) Molecular Mechanisms of Signal Transduction in Heme-Containing Oxygen Sensor Proteins

Marketa Martinkova, Martin Stranava, Veronika Fojtikova, Petr Man, Vaclav Martinek, Toru Shimizu

870(Invited) New Cyclic Porphyrin Arrays ~ Preparation and Specific Elution Behavior on Modified Silica-Gel Columns

Akiharu Satake

871(Invited) DNA As Supramolecular Template for the Assembly of Porphyrin Arrays

Eugen Stulz, Iwona Mames

872(Invited) Stabilization of a Saddle-Distorted Porphyrin Monoacid

Takahiko Kojima, Wataru Suzuki, Hiroaki Kotani, Tomoya Ishizuka

873(Invited) Energetic Analysis of Interactions in Electron Transfer Complex Between Cytochrome C and Cytochrome C oxidase

Koichiro Ishimori

874(Invited) Oxidation Chemistry of Manganese Porphyrins in Interaction with DNA

Genevieve Pratviel

875(Invited) Structure and Function of Heme Acquisition System in Corynebacterium Glutamicum

Shigetoshi Aono

876(Invited) Thermodynamics and Kinetics at the Solid-Solution Interface: Who Wins When?

K W Hipps, Ursula Mazur

877(Invited) Growth, Structure, and Optoelectronic Properties of Crystalline Binary Porphyrins

Ursula Mazur, K W Hipps, Brian Borders, Marshall VanZijll

878(Invited) Pre-Organized Dinucleosides with Pendant Porphyrins for the Formation of Sandwich Type Complexes with DABCO with High Association Constants

Nathalie Solladie

879(Invited) Colour Bricks: Molecule-By-Molecule Supramolecular Arrays of Peryleneimides and Phthalocyanines on Solid Substrates

Alexander Efimov, Elena Efimova, Essi Sariola-Leikas, Arto Hiltunen, Hanna Hakola, Paola Vivo

880(Invited) Multi-Chromophore Containing Nanostructures Prepared Using Host-Guest Interactions

Janarthanan Jayawickramarajah, Mengyuan Zhu, Cooper Battle, Xiao Zhou

881(Invited) Multiple Photosynthetic Reaction Centers of Porphyrinic Polypeptide-$Li^{+}@C_{60}$ Supramolecular Complexes

Kei Ohkubo, Tetsuya Hasegawa, Regis Rein, Nathalie Solladie, Shunichi Fukuzumi

882(Invited) Electrochemical Bistability of Porphyrin in Supramolecular Porphyrin/Phthalocyanine Assembly

Kentaro Tanaka, Yasuyuki Yamada

883(Invited) Supramolecular Porphyrin Copolymer Directed By Host-Guest Interactions and Metal Coordination

Takeharu Haino

884(Invited) Metal Assembly of a Dendrimer with a Porphyrin Core

Kimihisa Yamamoto

885(Invited) Synthesis and Photophysical Properties of Photofunctional Porphyrin Supramolecular Assemblies

Taku Hasobe, Hayato Sakai

886(Invited) Ionic Self-Assembly of Iron(III) Porphyrin into Nanoflowers As Highly Efficient Oxygen Reduction Reaction Electrocatalysts after Pyrolysis

Yujiang Song, Yan Xie

887(Invited) Controlled Growth of Porphyrin Based Nano/Micro Coordination Polymers and Their Use in Olefin Oxidation

Kyung Yeon Lee, Suk Joong Lee

B09-Engineering Carbon Hybrids - Carbon Electronics 2

Dielectric Science and Technology/Battery/Electronics and Photonics/Nanocarbons/Sensor

888(Keynote) 2D+1D and 2D+0D Hybrid Nanostructures and Their Applications in Electrochemical Energy Storage

Mengqiang Zhao, Mohamed Alhabeb, Yury Gogotsi

889Micro- and Mesoporous Carbons and Composites: Nanopores through Salt Templating

Nina Fechler, Thomas Jordan, Christian Mbaya Mani, Markus Antonietti

890Synthesis of Oxide-Anchored Graphene Sheets By Electrochemical Exfoliation

Chun-Han Lai, Xin Zhou, Hyung-Seok Kim, Bruce Dunn

891Chemistry at the Dirac Point: Organometallic Hexahapto (Î·^{6}) Complexation Chemistry of Graphene

Santanu Sarkar

892Simple and Economic Paper Based Graphitic Touch-Pad for Multipurpose Applications

Mitradip Bhattacharjee, Dipankar Bandyopadhyay

893Fabrication, Characterization, Modification, and Application of Carbons Electrodes Derived from Paper

Carlos D Garcia, Tomas E Benavidez, Gema Duran, Angel Rios, Jason Giuliani, Fausto Comba, Elizabeth Evans

894Renewable Carbon Sources and Novel Technologies for the Manufacturing of Carbide Parts

Rodrigo Martinez-Duarte

895Towards Additive Manufacturing of Tungsten Carbide Using Renewable Resources

Monsur Islam, Rodrigo Martinez-Duarte

896Synthesis of Tungsten Carbide from Bacterial Cellulose

Monsur Islam, Rodrigo Martinez-Duarte

897Synthesis of titanium oxycarbide through carbothermal reduction of titanium dioxide nanoparticles and renewable biopolymers

Joshua Paul Flach, Paulo Henrique Figueiredo de Lima, Joshua Craig Sparks, Monsur Islam, Rodrigo Martinez-Duarte

898Pyrolysis Process Optimization for SU8-Derived Carbon Structures

Bidhan Pramanick, Victor Hugo Perez-Gonzalez, Sergio Omar Martinez-Chapa, Marc J Madou

899Effect of Gases during Pyrolysis on Physical and Electrochemical Properties of SU-8 Photoresist Derived Carbon Film

Sharifah Bee Abd Hamid, pui Kee Lee, Fatimah Ibrahim, Marc J Madou

900Shrinkage Analysis for Carbon Microstructures Derived from SU-8 Photoresist

Rucha Natu, Monsur Islam, Rodrigo Martinez-Duarte

901Pyrolytic Carbon Microelectrodes for Impedance Based Cell Sensing

Yasmin Mohamed Hassan, Claudia Caviglia, Suhith Hemanth, David M. A. Mackenzie, Dirch H. Petersen, Stephan Sylvest Keller

902Fabrication of Biocompatible Hollow Microneedle Using C-MEMS Process for Transdermal Drug Delivery

Bidhan Pramanick, Sergio Omar Martinez-Chapa, Marc J Madou

903A New Approach for Selective Surface Functionalization of Carbon Electrodes in Biosensing by Plasma Direct-Writing

Aung Thiha, Fatimah Ibrahim, Sharifah Bee Abd Hamid, Marc J Madou

9043D Carbon-MEMS a Potent Molecular Recognition Platform for the Detection of DNA Molecule

md Mahfujur Rahman, Sharifah Bee Abd Hamid, Fatimah Ibrahim, Marc J Madou

905Modeling and Experimental Study of Micro Enzymatic Biofuel Cells

Yin Song, Chunlei Wang

906SU-8 Photoresist Derived 3D Carbon Microelectrode As High Capacity Anode Material for Lithium Ion Battery

Manohar Kakunuri, Mamidi Suresh, Chandra Shekhar Sharma

907SU-8/MWCNT derived Electrospun Composite Carbon Nanofabric as a High Performance Anode Material for Lithium Ion Battery

Manohar Kakunuri, Shubham Kaushik, Ayush Saini, Chandra Shekhar Sharma

908Development of Micro-Supercapacitor Electrodes Based on Hybrid Transition Metal Oxide, Carbonized Silicon Nanowire Array

Sinem Ortaboy, John Alper, Carlo Carraro, Roya Maboudian

909Development of Pyrolyzed Nanoporous Carbon Electrodes with Sponge-like Networks of Mesopores for Use As Supercapacitors

Yeongjin Lim, Sang Hoon Joo, Heungjoo Shin

910Notes on Neuroplasticity Investigation using Coupled Electrical and Electrochemical Sensing through Carbon Electrodes

Mieko Hirabayashi, Sam Kassegne, Aiva Ievins, Nha Uyen Huynh, Shane Witsell, Scott Seidman

911Modeling and Characterization of Tissue/Electrode Interface in Capacitive µECoG Glassy Carbon Electrodes

Noah Goshi, Maria Vomero, Ian Dryg, Scott Seidman, Sam Kassegne

912In-Vivo Characterization of Glassy Carbon µ-Electrodes and Histological Analysis of Brain Tissue after Chronic Implants

Maria Vomero, Ian Dryg, Tyler Maxfield, William Shain, Steve Perlmutter, Sam Kassegne

913Biosensing and Photoinactivation of S.Typhi in Water with ZnO-Rgo Hybridphotocatalysts

Sharifah Bee Abd Hamid, pui Kee Lee, swee Jyan Teh, kwai Lin Thong

9143D Carbon-Electrode Dielectrophoresis for Enrichment of a Small Cell Population from a Large Sample Volume

Monsur Islam, Rucha Natu, Maria Fernanda Larraga-Martinez, Guillermo Contreras Dávila, Rodrigo Martinez-Duarte

915Assessing the Advantages of Using Square Wave Signals for Particle Trapping in Carbon-Electrode Dielectrophoresis

Guillermo Contreras Dávila, José I. Gómez-Quiñones, Victor Hugo Perez-Gonzalez, Rodrigo Martinez-Duarte

916Carbon Nanotubes (CNTs) a Potent Nanoplatform for Biomolecular Sensing

Mohammad Al Amin, md Mahfujur Rahman, Sharifah Bee Abd Hamid

917Pyrolytic 3D Carbon Microelectrodes for Electrochemistry

Suhith Hemanth, Claudia Caviglia, Letizia Amato, Thomas Aarøe Anhøj, Arto Heiskanen, Jenny Emnéus, Stephan Sylvest Keller

918Fabricating Suspended Carbon Wires Using SU-8 Photolithography

Emanuele Giogli, Monsur Islam, Rodrigo Martinez-Duarte

919Study of Pulling Effect on the Electrical Conductivity of Suspended Carbon Microfibers Due to Electromechanical Spinning (EMS)

Arnoldo Salazar, Maria Bauer, Sunshine Holmberg, Marc J Madou

920Fabricating Carbon Nanofiber Electrodes with Embedded Iron Nanoparticles Using Block Copolymers Templates

Sunshine Holmberg, Maziar Ghazinejad, Marc J Madou

921Porous Carbon Interdigitated Electrode Arrays for Electrochemical Biosensors

Fatimah Ibrahim, Reena Sri Selvarajan, Bashar Yafouz, Marc J Madou, Pedram Azari, Sharifah Bee Abd Hamid, Seng Neon Gan

C01-Corrosion General Session

Corrosion

922Effects of a Magnetic Field on Anodic Dissolution and Surface Morphology of Iron in a Chloride Solution with Nitrite Ions

Zhen Chen, Hongjuan Li, Qian Xiao, Zhanpeng Lu

923Potentiodynamic Polarization and Potentiostatic Polarization Behaviors for Iron in Sulfuric Acid Solution with or without a Magnetic Field

Hongjuan Li, Zhen Chen, Qian Xiao, Zhanpeng Lu

924The Impact of Stress-Strain States on Hydrogen Flux in Martensitic Steels

Daniella Guedes, Stephane Cohendoz, Abdelali Oudriss, Jamaa Bouhattate, Florian Thebault, Juan Creus, Xavier Feaugas

925Investigation of Galvanic Corrosion Behavior of Dual Phase Steel

Yongchao Si

926Electrochemically Induced Surface Annealing of Stable Martensite and Its Influence on Corrosion Resistance

Zhilin Li, Li Li, Aiyue Tang, Feng Wang

927On the Significance of the Mechanism of Hydrogen Evolution Reaction in Corroding Systems

Aria Kahyarian, Srdjan Nesic

928Effects of Hydrogen on the Surface Films Formed on Iron in Pure Water at Various Temperatures

Ahsan Ejaz, Qian Xiao, Junjie Chen, Guangdong Han, Zhanpeng Lu

929The Effects of Hydrogen on Corrosion Products Formed on Iron in Chloride Solutions

Ahsan Ejaz, Junjie Chen, Qian Xiao, Guangdong Han, Zhanpeng Lu

930The Effect of Hydrogen on the Corrosion and Anodic Behavior of 13Cr Stainless Steel in Chloride Solution

Hao Peng, Xiangkun Ru, Junjie Chen, Guangdong Han, Zhanpeng Lu

931Electrochemical Behaviors of Various Alloys in Ferric Sulfate Solution

Qian Xiao, Junjie Chen, Zhen Chen, Zhanpeng Lu

932Effects of H_2s and pH on Tafel Slopes in Electrochemical Corrosion of High Strength Carbon Steel S-135 in Alkaline Brines

Ruishu Feng, Justin Beck, Margaret Ziomek-Moroz, Serguei N. Lvov

933EIS Study on Corrosion Mechanisms of Steel Rebars in Concrete

Masayuki Itagaki, Masanori Soukura, Taisuke Koike, Tatsuki Okamoto, Hiroyuki Tokieda, Yoshinao Hoshi, Isao Shitanda, Yoshitaka Kato

934The Effect of a Complex Planktonic and Biofilm Bacterial Consortia on Marine Corrosion of 1020 Carbon STEEL

Zakari Makama, Sukriye. Celikkol Aydin, Egemen Aydin, Vincent Bonifay, Jan Sunner, Iwona Beech

935A Comparative Study of Cerium and Aluminum Conversion Coatings on AZ31 Magnesium Alloy in Aqueous and Ethanol Solutions

Yu-Ren Chu, Chao-Sung Lin

936Effect of Process Parameters on the Corrosion Resistance Properties of PEO Coatings Produced on AZ31B Magnesium Alloy

Yuri Savguira, Qing Ni, Pedro H. Sobrinho, Tom H. North, Steven J. Thorpe

937Corrosion of an Aluminum Alloy (AA2024) Influenced By Microorganisms of a Bacterial Consortium

Maritza Angelica Paez

938High-Resolution Studies of Crevice Corrosion of Nickel and Aluminum with Real Time Multiple Beam Interferometry and Microscopy

Claudia Merola, Buddha Ratna Shrestha, Markus Valtiner

939Self-Organizing Anodization in Pure Molten O-H_3PO_4

Marco Altomare, Nhat Truong Nguyen, P. Schmuki

940Anodic Dissolution of Titanium in Acidic Fluoride Media - Effect of Varying Fluoride Concentration

Amrutha MS, Fathima Fasmin, P Ilayaraja, Sudakar Chandran, Ramanathan Srinivasan

941Corrosion and Surface Modification of Ti-6Al-4V Implant Alloy Under Various Simulated Biological Environments

Sannakaisa Virtanen

942Studies on Zirconium Dissolution in Hydrofluoric Acid

Amrutha MS, Ramanathan Srinivasan

943Theoretical Modeling of Erosion-Corrosion of Stainless Steel in NaCl Solution Containing Silica Sand

Xiangyang Zhou, Yugui Zheng, Shiyu He

944Marine Corrosion of 1018 Carbon STEEL in the Presence of Traditional Naval Petro- and BIO- FUEL Blends

Zakari Makama, Sukriye. Celikkol Aydin, Vincent Bonifay, Egemen Aydin, Jan Sunner, Iwona Beech

945Deposition of Magnetite on 304 SS Under Phosphate & Caustic Treatment Regimes in Boiler Environments

Balaji Raman, Derek M. Hall, Stephen J. Shulder, Michael F. Caravaggio, Serguei N. Lvov

946Effects of H_2s and CO_2 on Cement/Casing Interface Corrosion Integrity for Cold Climate Oil and Gas Well Applications

Justin Beck, Ruishu Feng, Derek M. Hall, Aysel Buyuksagis, Margaret Ziomek-Moroz, Serguei N. Lvov

947Environmental Aspects of Using Metallic Organic Frameworks As Adsorbents in Natural Gas Storage Systems

Mahmoud Hassan Abd Elhamid, Anne Dailly, Mei Cai

948Corrosion Behavior of Aluminide Intermetallic Coating on Stainless Steel in Aggressive HCl Solution

Wenjuan Liu, Yu Wang

949An in-Depth Analysis of Protective Coatings Via Combination of EIS and SDM Techniques in Single Run

Ritesh Vyas, Michael Kubicsko

950Effects of Reclaimed Water Blending on the Pipe Corrosion in an Irrigation System

Dalsik Woo, Taesub Shin, Jaekyeong Lee, Sunghoon Shin, Haksoo Lee

951Inhibition Effect of Some Cationic Surfactants on Carbon Steel in 1M H_2so_4 and 1M HCl Medium

Florina Branzoi, Catalina Pacuretu, Roxana Branzoi

952The Effect of Plasma Electrolytic Oxidation Parameters on Coating Morphology and Corrosion Behavior

Sezgin Cengiz, Aytekin Uzunoglu, Mehmet Tarakci, Yucel Gencer, Lia Stanciu

953Anti-Corrosion and Mechanical Property of Zinc Modified Nanocomposites

Te-Hua Fang, Ching-Hui Lee

954Behavior of Passive Film on New Ti-Zr-Ta-Ag Alloy Surface in Simulated Biofluid

Cora Vasilescu, Silviu Iulian Drob, Petre Osiceanu, Jose Maria Calderon Moreno, Mariana Prodana, Daniela Ionita, Ecaterina Vasilescu, Monica Popa

955Corrosion Behavior of New Dental Co-Cr-Nb-Mo-Zr Alloy

Silviu Iulian Drob, Cora Vasilescu, Mihai Andrei, Petre Osiceanu, Jose Maria Calderon Moreno, Ioana Demetrescu, Monica Popa

956Synergistic Effect of Anodic and Organic Inhibitors on Corrosion Inhibition of Ductile Cast Iron

Ki Tae Kim, Hyun Young Chang, Bu Taek Lim, Heung Bae Park, Young Sik Kim

957Impedance-Based Monitoring of Corrosion Behaviors in Graphene-Coated Metallic Substrates: Effect of Atomic Layer Deposition of Oxide Materials

Yoo-Jin Choi, Eui-Hyun Kim, Ki-Won Seo, Kyoung-Woo Kwon, Jinha Hwang

958Surface Characterization of Candidate Materials for High Temperature Power Plants

David Rodriguez, Dev Chidambaram

959Corrosion Behavior of Austenitic Stainless Steel in Supercritical CO_2 Containing O_2 and H_2o

Lucas Teeter, Nicolas Huerta, Omer Dogan, Margaret Ziomek-Moroz, Richard Oleksak, Danylo Oryshchyn

960Corrosion of Engineering Alloys in Supercritical CO_2

Zachary Karmiol, David Rodriguez, Kodi Summers, Dev Chidambaram

961Evaluation of Candidate Materials for Use in Supercritical CO_2 Environment

David Rodriguez, Zachary Karmiol, Kodi Summers, Dev Chidambaram

962Characterization of Austenitic Steels for High Temperature Power Plants

Zachary Karmiol, Dev Chidambaram

963Comparative Corrosion Behavior of Austenitic Stainless Steels in Carbonate Melt at 650 °C Under Controlled CO_2-O_2 Environment

Santosh Prasad Sah, Eiji Tada, Atsushi Nishikata

964Corrosion and Redox Potential Control of High Temperature Materials in Fluoride and Chloride Molten Salts

Roderick Eliel Fuentes, Luke Christopher Olson, Michael Joe Martinez-Rodriguez, Joshua R. Gray, Brenda Lee Garcia-Diaz

965Electrochemical Study of Corrosion in High Temperature Molten Salts

Brenda Lee Garcia-Diaz, Luke Christopher Olson, Michael Joe Martinez-Rodriguez, Roderick Eliel Fuentes, Joshua R. Gray

966Corrosion Suppression with Redox Control in KCl-$MgCl_2$ Under Flow

Luke Christopher Olson, Joshua R. Gray, Michael Joe Martinez-Rodriguez, Roderick Eliel Fuentes, Brenda Lee Garcia-Diaz

967Corrosion Behavior of Structural Materials for Use in Solar Thermal Molten Salt Power Plants

Kodi Summers, Dev Chidambaram

968Development of Electrochemical Methods for High Temperature Molten Fluoride Salt Systems

Francesco Carotti, Meredy Brichford, Raluca Scarlat

969Electrochemical Performance of the Li-Bi Reference Couple in Molten LiCl-Li_2O-Li

William Phillips, Augustus Merwin, Dev Chidambaram

970Corrosion Behavior of Monel 400 in Molten LiCl-Li_2O-Li

William Phillips, Augustus Merwin, Dev Chidambaram

971The Effect of Nickel Alloy Corrosion Under Cathodic Protection inside High Temperature Molten Salt Systems

Bahareh Alsadat Tavakoli, Sirivatch Shimpalee, John W. Weidner, Brenda L. Garcia-Diaz, Michael J. Martinez-Rodriguez, Luke Christopher Olson

972Investigation, Modeling and Design of a Cathodic Protection System for Hull Structures in Marine Environment

Rauf Aksu, Refik Onur Uguz, Metehan Erdogan, Halim Meco, Ishak Karakaya

973Evaluating Water Corrosivity of Water Treatment Plants in Korea

Ju-hyun Park, Yujeong Huh, Byungdae Min, In-cheol Choi, Hyen-Mi Chung, Young-bog Park, Young-june Choi, Eunhee Park, Mrs. Lee

974The Technology of Corrosion Control with Corrosion Inhibitors in Water Pipes

Young-bog Park, Young-june Choi, Eunhee Park, Jinsuk Lee, Ju-hyun Park, Byungdae Min, Yujeong Huh, In-cheol Choi, Hyen-Mi Chung

975Adsorption and Corrosion Inhibition Behaviour of Some N-{n-[1-R-5-(quinoxalin-6-yl)-4,5-Dihydropyrazol-3-Yl]Phenyl}Methanesulfonamides on Mild Steel in 1 M HCl (n = 2, 3, 4; R = propanoyl, methylsulfonyl): Experimental and Theoretical Studies

Lukman Olawale Olasunkanmi, Eno E Ebenso

976The Development of Novel Sound-Absorbing and Anti-Corrosion Nanocomposite Coating

Chien-Yu Huang, Gao-Shu Jhuang, Yueh-Lien Lee

977Corrosion Resistance in Acidic Solution of Ni-W Nanostructured Alloys

Juan Creus, Mathieu Lagarde, Niusha Shakibi NIA, Alain Billard, Luc Pichon, Xavier Feaugas, Catherine Savall

978Degradation of Ir-Ta Oxide Coated Ti Anodes in Sulfuric Acid Solutions

Dongni Ma, Vanda Ngo, Srini Raghavan

979Polarization Behavior of Iron Under Artificial Zinc Corrosion Products Formed from Aqueous $MgCl_2$ Solutions Containing Zn^{2+}

Eiji Tada, Atsushi Nishikata

980Corrosion Behavior and Contact Resistance of Electroplated γ-ZnNi with Passivation Layers

Steven Michael Volz, James B Claypool, Matthew O'Keefe, William Fahrenholtz

981Electrodeposition, Microstructural Characterization and Anticorrosive Properties of Zn-Mn Alloy Coatings

Damien Close, Nicolas Stein, Nathalie Allain, Albert Tidu, Estelle Drynski, Marion Merklein, Régis Lallement

982The Utilization of Hydrophobic Coatings on Insulative Skirts to Galvanically Decouple Mechanically-Fastened Aluminum Alloy and Carbon-Fiber Reinforced Polymer-Matrix Composites

Raghu Srinivasan, Lloyd H. Hihara

D01-Dielectrics for Nanosystems 7: Materials Science, Processing, Reliability, and Manufacturing -and- Solid State Topics General Session

Dielectric Science and Technology/Electronics and Photonics/Energy Technology/Luminescence and Display Materials/Nanocarbons/Organic and Biological Electrochemistry/Sensor

983(Invited) Non-Volatile Resistive Memory: Technology Capable of Revolutionary Compromises

Gabriele Navarro, Elisa Vianello, Véronique Sousa, Gabriel Molas, Etienne Nowak, Barbara De Salvo, Luca Perniola

984(Invited) Floating Gate Type SOI-FinFET Flash Memories with Different Channel Shapes and Interpoly Dielectric Materials

Yongxun Liu, Toshihide Nabatame, Takashi Matsukawa, Kazuhiko Endo, Shinichi O'uchi, Wataru Mizubayashi, Yukinori Morita, Shinji Migita, Hiroyuki Ota, Toyohiro Chikyow, Meishoku Masahara

985Characterization of SiO_x/HfO_x bilayer Resistive-Switching Memory Devices

Ying-Chen Chen, Yao-Feng Chang, Xiaohan Wu, Meiqi Guo, Burt Fowler, Fei Zhou, Chih-Hung Pan, Ting-Chang Chang, Jack C. Lee

986Characterization of Porous Beol Dielectrics for Resistive Switching

Marius K Orlowski, Ye Fan, Sean W. King, Jeff Bielefeld

987(Invited) III-V Selective Area Growth and Epitaxial Functional Oxides on Si: From Electronic to Photonic Devices

Clement Merckling, Ziyang Liu, Mark Hsu, Samiul Hasan, Sijia Jiang, Salim El Kazzi, Guillaume Boccardi, Niamh Waldron, Zhechao Wang, Bin Tian, Marianna Pantouvaki, Joris Van Campenhout, Nadine Collaert, Marc Heyns, Dries Van Thourhout, Wilfried Vandervorst, Aaron Thean

988(Invited) Atomically Controlled Processing for Si and Ge CVD Epitaxial Growth

Junichi Murota, Yuji Yamamoto, Ioan Costina, Bernd Tillack, Vinh Le Thanh, Roger Loo, Matty Caymax

989Control of the Surface Chemistry of Magnetron-Deposited Silicon Nitride Etched with Various Wet Treatments

Marine Brunet, Anne-Chantal Gouget-Laemmel, Damien Aureau, Francois Guillemot, Arnaud Etcheberry, François Ozanam

990Dual ICP Si Etching and Vapor Deposition Polymerization Liner for Backside Via-Last TSV Packaging Process Integration

Yasuhiro Morikawa

991RT Atomic Layer Deposition of ZrO_2 By Using Plasma Excited Water Vapor

Kensaku Kanomata, Kentaro Tokoro, Takahiro Imai, P.Pungboon Pansila, Masanori Miura, Bashir Ahmmad, Shigeru Kubota, Kazuhiro Hirahara, Fumihiko Hirose

992(Invited) Gate-All-Around Nanowire FETs vs. Triple-Gate FinFETs: On Gate Integrity and Device Characteristics

Anabela Veloso, Moon Ju Cho, Eddy Simoen, Geert Hellings, Philippe Matagne, Nadine Collaert, Aaron Thean

993Lateral Non-Uniformity Reduction By Compensatory Metal Embedded in MOS Structure with Ultra-Thin Anodic Oxide

Jun-Yao Chen, Wei-Chih Kao, Jenn-Gwo Hwu

994(Invited) Control of Thermally-Grown SiO2/4H-SiC Mos Interface Properties and Its Impact on Mosfet Performances

Koji Kita, Hirohisa Hirai, Yuki Fujino, Hiroyuki Kajifusa

995A Comprehensive Analytical Study of Subthreshold Swing for Cylindrical Gate-All-Around Junctionless Field Effect Transistor

Imtiaz Ahmed, Quazi D. M. Khosru

996(Invited) Broadband Spectroscopic Characterization of Electrically Active Defects in Dielectrics: Monitoring the in-Service Evolution of Dialectics in Integrated System

Yaw S. Obeng, Chukwudi A Okoro, Papa K. Amoah, Lin You

997(Invited) Characterization of Buried Interfaces with Scanning Probe Microscopes

Joseph J. Kopanski, Lin You, Jennifer Li, Jung Joon Ahn, Yaw S. Obeng

998(Invited) Non-Destructive Characterization of Dielectric - Semiconductor Interfaces By Second Harmonic Generation

Irina Ionica, Dimitrios Damianos, Anne Kaminski, Guy Vitrant, Danièle Blanc-Pélissier, John Changala, Marc Kryger, Corina Barbos, Sorin Cristoloveanu

999(Invited) A Complete Suite of Experimental Techniques for Electrical Characterization of Conventional and Incoming High-k Dielectric-Based Devices

Salvador Dueñas, Helena Castán, Héctor García, Tonis Arroval, Aile Tamm, Kaupo Kukli, Jaan Aarik

1000(Invited) Defect Spectroscopy and Engineering for Nanoscale Electron Device Applications: A Novel Simulation-Based Methodology

Luca Larcher, Gabriele Sereni, Luca Vandelli

1001(Invited) Development of in situ Electrochemical Small-Angle Neutron Scattering (eSANS) for Simultaneous Structure and Redox Characterization of Nanoparticles

Vivek M Prabhu, Vytas Reipa, Adam J Rondinone, Eric Formo, Peter V Bonnesen

1002Scanning Probe-Based in-Situ High Temperature Electrical and Electrochemical Studies

Chee Seng Ng, Jong Dae Baek, Vishal Zade, Adrian Villegas, Pei-Chen Su, Ashlie Martini, Min Hwan Lee

1003Performance Analysis of InAs/AlSb MOS-HEMT by Self-Consistent Capacitance-Voltage Characterization and Direct Tunneling Gate Leakage Current

Imtiaz Ahmed, Sayema Chowdhury, Md. Hasibul Alam, Iftikhar Ahmad Niaz, Quazi D. M. Khosru

1004(Invited) Trench-gated MOSFET Instability Caused by High Temperature Reverse-bias Stress

Jifa Hao

1005(Invited) Tuning the Strain and Physical Properties of Highly Epitaxial Perovskite Thin Films on Vicinal Substrates

Yuan Lin, Guang Yao, Min Gao, Chonglin Chen

1006(Invited) On the Modeling of the Charge Pumping Curves

Daniel Bauza

1007Two States Phenomenon Induced By Neighboring Device Coupling Effect in MIS(p) Tunnel Current

Wei-Chih Kao, Jun-Yao Chen, Jenn-Gwo Hwu

1008Decoupling of Ion Diffusivity and Electromobility in Porous Dielectrics

Marius K Orlowski, Ye Fan, Sean W. King, Jeff Bielefeld, Rizwan Ali

1009Low Dielectric Constant, Air-Cavities Created By the Use of Low-Ceiling Temperature Polymers

Jared Schwartz, Oluwadamilola Phillips, Zhaoqun Pan, Alexandra Sutlief, Paul A Kohl

1010(Invited) The Defects of ZnO Nanorods Passivated By Ultra-Thin Al_2O_3 Film

Shibin Li, Detao Liu, Peng Zhang, Yafei Wang, Hojjatollah Sarvari, Yaoyu Xuan, Zhi David Chen

1011(Invited) Tunnel-Barrier Rectifiers for Optical Nantennas

Ivona Z. Mitrovic, Ayendra Don Weerakkody, Naser Sedghi, Stephen Hall, Jason F. Ralph, Jacqueline S. Wrench, Paul R. Chalker, Zhenhua Luo, Steve Beeby

1012(Invited) Photocurrents in Topological Insulators Based on Hgte

Kathrin-Maria Dantscher, Sergey D. Ganichev

1013(Invited) Doped Titania Oxide Nanotubes for Photoelectochemical Water Splitting

Qiang Liu, Dongyan Ding, Congqin Ning, Zhenbiao Dong

1014A Study of Electrical and Optical Properties of Boron-Doped Amorphous Silicon Deposited by RF-PECVD with Different B_2H_6/H_2 Flow Rates

Ghada Dushaq, Nazek El-Atab, Mahmoud Rasras, Ammar Nayfeh

1015(Invited) Development of New High-Dielectric Constant Thin Film Materials for Next-Generation Nanoelectronics

Takahiro Nagata, Somu Kumaragurubaran, Kenichiro Takahashi, Sung-Gi Ri, Yoshifumi Tsunekawa, Setsu Suzuki, Toyohiro Chikyow

1016(Invited) Ternary Rare Earth Based Oxides for Nitride Based Devices

Thomas Carl Ulrich Tromm, Anna Schäfer, Martina Luysberg, Fabian Andreas Wendt, Astrid Besmehn, M. Mikulics, Hilde Hardtdegen, Siegfried Mantl, Jürgen Schubert

1017(Invited) Process and Integration of Dielectrics Required for 10nm and Beyond Scaling

Robert D. Clark, Kandabara Tapily, Steven Consiglio, Takahiro Hakamata, David O'Meara, Cory S. Wajda, Gert J. Leusink, Daniel Newman, Michael Collings, Dennis Szymanski

1018(Invited) High-k Materials and Embedded Nanocrystals for Electronic and Photonic Applications

J. Heitmann

1019Ta-Mo Isomorphous Alloy Systems for Metal Gate Apllications

Hung-Yi Yu, Yong-Jhong Deng, Yi-Sheng Lai

1020Effect of Gate Oxide Thickness on Negative Bias Temperature Instability in p-Mosfet with Sion Gate Dielectrics

Hyojune Kim, Yoosang Hwang, Kyu-pil Lee

1021Dry and Wet Processed Interface Layer in Ge/High-K Devices Studied By Deep Level Transient Spectroscopy

YI Ming Ding, Durga Misra

1022Degradation in Pmosfet during Off-State Stress

Segeun Park, Ilgweon Kim, Yonghan Roh

1023Low Thermal Budget Microwave Annealing for Nisige Schottky Junction Device

Hui-Hsuan Li, Yi-He Tsai, Yu-Hsien Lin, Chao-Hsin Chien

1024Effect of Cu Drift on Dielectric Breakdown for Porous Low Dielectric Constant Film Under Static and Dynamic Stress

Yi-Lung Cheng, Yao-Liang Huang, Chung-Ren Sun, Wen-Hsi Lee, Giin-Shan Chen, Jau-Shiung Fang

1025Numerical Investigation on Atomic Migration Effect on Thermal Conductivity of Al/Cu Interface Structures in Electronic Interconnection Packaging

Liqiang Zhang, Daohan Ge

1026Electrical Properties and Nanoresistive Switching of Ni-HfO_2-Si Capacitors

Héctor García, Mireia Gonzalez, Cesar Vaca, Helena Castán, Salvador Dueñas, Francesca Campabadal., Enrique MIranda, Luis Bailon

1027Effects of Precursor Flow Rates on Characteristics of Low-K SiOC(H) Film Deposited by Plasma-Enhanced Chemical Vapor Deposition

Chiao-Wei Huang, Yi-Lung Cheng

1028Performance Enhancement of Metal Floating Gate Memory By Using a Bandgap Engineered High-k Tunneling Barrier

Dandan Jiang, Lei Jin, Zhiliang Xia, Guoxing Chen, Xingqi Zou, Yu Zhang, Zhaoyun Tang, Zongliang Huo

1029$BaTiO_3$ Film Grown By Water-Based Process

Sarmad Fawzi Hamza Alhasan, Hussain Abouelkhair, Robert E. Peale, Isaiah O. Oladeji

D02-Chemical Mechanical Polishing 14

Dielectric Science and Technology

1030Impact of Business Trends on Advanced CMP Process Technology Development

R. Rhoades

1031(Invited) Combined Gas Cluster Ion Beam (GCIB) and Chemical-Mechanical Planarization (CMP) Process for Replacement Metal Gate (RMG) Application

Wei-Tsu Tseng, Justin Long, Kaushik Mohan, Changhong Wu, Taher Kagalwala

1032Ru Film Characterization Correlated to Advanced CMP Slurry Performance

Matthias Stender, Bela Derecskei, James A Schlueter

1033The Study on Keeping the Pad Surface Condition in W CMP Process

Dong Won Oh

1034A Ring Type Residue Formation in Post Cu CMP Cleaning

Hojoong Kim, Dong Hyun Liim, Jinok Moon, Jun-Yong Kim, Hasub Hwang, Taesung Kim

1035(Invited) Study on Cu Surface Flake Generation Mechanism of 1x Nm Cu CMP Process

JI Chul Yang, Sudhir Baral, Si-Gyung Ahn, Gerett Yocum

1036Advanced Process Control for Variability Control in Chemical Mechanical Polishing Process

Dinesh R Koli, Rachel Wan Hsiang Liang, Hong Jin Kim

1037A Novel Light Scattering Analysis Method for Monitoring Undiluted CMP Slurry

Michael A. Fury, Michael F. Klein, Phil Burlison, Ray Wakefield

1038Mixed Strategy Combination of Pressure and Velocity Control for Chemical Mechanical Planarization of Patterned Wafers

Abhijit Chandra, Ashraf Bastawros, Kuan-Chuen Wu, Pavan Karra

1039Bubble Tolerant Liquid Management

Alan Young

1040Advanced Carriers on Legacy CMP Tools - an Intelligent Solution for Flexible Production Environments and R&D Labs

Knut Christoph Gottfried, Barrie VanDevender, Dan Trojan, Paul Feeney, Ina Schubert, Romy Junghans, Ronny Martinka, Mathias Franz, Catharina Rudolph, Holger Wachsmuth

1041Immersion Metrology for CMP Pad Monitoring

Terry Moore, Andres Arasanz

1042Non-Prestonian Behavior Study and Development of Advanced Oxide Polish Slurry for Stop-In-Film Applications

Hongjun Zhou, Krishna Murella, John Hughes, Mark O'Neill

1043Development of Cobalt Chemical Mechanical Planarization Slurries By Electrochemical/Surface Analytical Screening and Polishing Studies

Murali Ganth Theivanayagam, Hongyu Wang, Jamie Cohen, Matthew VanHanehem, Tim Sabo, Stephan DeNardi

1044Role of Cerium Oxide Surface Chemistry in Adsorption of Polyacrylic Acid in CMP Slurries

Shashank Saraf, Ali Mesbahi, James Harper, Sudipta Seal

1045(Invited) Quantification and Characterization of Adsorbed BTA on Copper Surfaces Under Conditions Relevant to Barrier CMP

Bing Wu, Srini Raghavan

1046The Use of Coefficient of Friction (COF) Measurements As a CMP Slurry Development Tool

James A Schlueter, Maitland Graham

1047The Mechanism of the Bridge Defect Caused By the Reaction with the Dispersant Polymer in Slurry and the Double Patterning Photo Layer

Robin Ihnfeldt

1056Initial Study on the Polishing Performance of Nitrogen-Doped Silicon Carbide (SiC)

Liqiao Qin, Sipeng Gu, Hong Jin Kim, Ja-Hyung Han, Dinesh R Koli

10573-D Extension of Chemical Mechanical Polishing for Nano-Structuring Applications on Alternative Technologies

Zeynep Ozdemir, G. Bahar Basim

1058Planarization of GaN Using a Fe^{III}-Ligand Based Catalyst in H_2O_2 Solution to Improve Its Removal Rate

Li Xu, Guoshun Pan

D04-Plasma and Thermal Processes for Materials Modification, Synthesis and Processing

Dielectric Science and Technology/High Temperature Materials/Sensor

1059(Invited) Plasma-Based Technology for Mass Production of Graphene and Other 2D Layered Materials

Michael Keidar

1060(Invited) Plasma Modification of Graphene Based Materials and Its Applications in Water Treatment

Hui Ying Yang

1061(Invited) Plasma Synthesis and Structural Control for Carbon Nanowalls for Novel Nano-Bio Devices

Hiroki Kondo, Masaru Hori, Mineo Hiramatsu

1062(Invited) Microwave Plasmas Applied for Synthesis of Free-Standing Carbon Nanostructures at Atmospheric Pressure Conditions

Elena Tatarova, Julio Henriques, Ana Dias, Miroslav Abrashev, Nenad Bundaleski, Edgar Felizardo

1063Production of N-Graphene By Microwave N2-Ar Plasmas (invited)

Julio Henriques, Elena Tatarova, Ana Dias, Francisco Dias, Nenad Bundaleski, Miroslav Abrashev, Edgar Felizardo, Uros Cvelbar

1064(Invited) Magnetron Sputtering for Deposition of Photocatalyst Nanostructures on Transparent Conductive Oxides for Solar Applications

Angela Kruth

1065(Invited) Plasma-Liquid Interactions for Nanoparticle Synthesis, Functionalization and Biomedical Interactions

Peter J Bruggeman

1066(Invited) Nanostructures Growth By Oxidation of Metallic Alloy Thin Films with Atmospheric Pressure Remote Plasma

Abdallah Imam, Thomas Gries, Khaled Hussein, Mateo Amati, Thierry Belmonte

1067Plasma Spray Pyrolysis: A Rapid, Scalable Method for Making Mixed Metal Oxide Alloys for Enabling Accelerated Materials Discovery

Mahendra Kumar Sunkara, Babajide Ajayi, Sudhesh Kumari, Joshua M Spurgeon, Jacek B Jasinski, Daniel Jaramillo-Cabanzo

1068Plasma As a Tool for Growth of 1D and 2D Nanomaterials and Their Conversions

Uros Cvelbar, Gregor Filipič, Mahendra Kumar Sunkara

1069(Invited) Numerical Simulation of a CAP Needle and Its Prospective Therapeutical Applications

Max Schroeder, Angel Ochoa, Cornelia Breitkopf

1070(Invited) Mechanisms of Plasma Therapy

David B Graves

1071(Invited) Deep Silicon Etching Increasingly Relevant >20 Years on!

Dave Thomas, Matthew Muggeridge, Janet Hopkins, Nicolas Launay, Huma Ashraf, Tony Barrass

1072(Invited) Plasma Process Simulation for Advanced Semiconductor Applications

Peter Ventzek, Alok Ranjan, Hirokazu Ueda, Kiyotaka Ishibashi

1073(Invited) Surface Science Aspects of Etching with Atomic Scale Fidelity

Thorsten Lill, Keren J. Kanarik, Samantha S.H. Tan, Meihua Shen, Yang Pan, Jeffrey Marks, Vahid Vahedi, Richard A. Gottscho

1074(Invited) Impact of Spark Plasma Sintering on the Thermoelectric Properties of Advanced Nanostructured Materials for Waste Heat Recovery

Yue Wu

1075Novel Strategies for the Mass Production of Corrosion-Resistant Nanowires and Their Bottom-up Assembly into Isotropic/Anisotropic Energy Conversion Devices

Sreeram Vaddiraju

1076Plasma Etching Chemistry for Smoothening Ofultrananocrystalline Diamond Films

Mahendra Kumar Sunkara, Daniel Jaramillo-Cabanzo, Gerold Willing

1077Environmental Friendly Fluorine Mixture for CVD Cleaning Processes to Replace C_2F_6, CF_4 and NF_3

Robert Wieland, Jamila Boudaden, Michael Pittroff

1078Proton Inserted SiO_2 Dielectrics for Nonvolatile Memory-Thin Film Transistor

Jin Nyoung Jang, JangWon Yun, MunPyo Hong

1079Perfect Separation of Hybrid Orientation Structure of CeO_2(100) and (110) Regions Grown on SOI Substrates with Lithographically Formed Trenches

Tomoyasu Inoue, Shigenari Shida

1080Improvement of Electron Injection by a Ramp-Shape N-Doped Architecture for High-Efficiency Organic Light Emitting Diodes

Chi-Ting Tsai, Sheng-Yuan Chu

1081Li_2CO_3 As an n-Type Dopant in Enhancing the Electron Injection of Organic Light-Emitting Devices

Ya-han Liu, Chi-Ting Tsai, Sheng-Yuan Chu

1082Enhancing Thermal Stability of Nickel-Germanide Alloy up to 600 °C By Using Metal Passivation

Yu-Hau Jau, Chen-Han Chou, Yi-He Tsai, Yu-Hsien Lin, Chao-Hsin Chien

1083Growth of Vertically Aligned Al-Doped ZnO Nanorod-Nanowalls Via Chemical Bath Deposition

Sheng-Yuan Chu, Jian-Fu Tang

E01-Electrophoretic Deposition

Electrodeposition

1084(Invited) Assembling Nanoscale Building Blocks through Electrophoretic Deposition for Batteries, Supercapacitors, Catalysis, and Printable Electronics

Richard Robinson

1085Electrophoretic Deposition of Nanoparticles into Three-Dimensional Felt As an Electrocataylst for the Solar Sulfur Ammonia Thermochemical Cycle

Nicole S Pacheco, J. B. Talbot

1086SEM Analysis of Electrophoretically-Deposited Cobalt Ferrite Films

Neil Verma, J. B. Talbot

1087Mesoscale Particle-Based Model of Colloidal Suspensions in Electric Fields

Brian Giera, Luis Zepeda-Ruiz, Andrew J. Pascall, Todd Weisgraber

1088Estimation of Concentration of Polymer Dispersant and Carbon Nanotubes in Electrophoretically Deposited Coatings By Means of UV-Vis Absorption Spectroscopy

Ali Can Zaman, Figen Kaya, Cengiz Kaya

1089Fabrication of PVDF- and NMP-Free Lithium Ion Electrodes By Electrophoretic Deposition

Marianna Uceda, Nima Parsi Benehkohal, George P. Demopoulos

1090Epd: From Order to Chaos By the LbL Modification of the Particle Surfaces

Zoilo Gonzalez, Claudine Filiatre, Yolanda Castro, Carlos Mendoza, Antonio Javier Sanchez-Herencia, Begoña Ferrari

1091Reduced Graphene Oxide Hydrogel/Nickel Foam Electrodes, Fabricated By Electrophoretic Deposition for Supercapacitor Applications: Toward High Volumetric Capacitance

James H. Dickerson, Viet Hung Pham

1092(Invited) Employing Electrophoretic Deposition in Biomaterial Processing

Lobat Tayebi

1093Reversible Assembly of Colloidal Particles Using Low Frequency Pulsed DC Electric Fields

Elaine Lee, Jessica Dudoff, Hannah Coe, Brian Giera, Andrew J. Pascall, Marcus A. Worsley, Joshua D. Kuntz, Luis Zepeda-Ruiz

1094Electrophoretic Deposition of Chitosan/Clobetasol Propionate Composite Micro-Pattern Scaffolds: Fabrication Process and Material Properties

Arash GhalayaniEsfahani, Pooja Bellatti, Elisa Brivio, Lina Altomare, Alberto Cigada, Luigi De Nardo

1095Mechanical Properties of Functionally Graded Boron Carbide/Aluminum Cermets Utilizing Electrophoretic Deposition (EPD)

Jason Rolando Morales, Richard Landingham, Andrew J. Pascall, Marcus A. Worsley, Joshua D. Kuntz

1096Process-Structure-Properties Relationship of Electrodeposited Au Thin Film Used in Thermoelectric Power Generation Device

Dhego Banga

1097Pulse Plating of Micro and Nano-Composites: Fundamental Perspectives and Industrial Application

Roberto Bernasconi, Francesca Allievi, Hamidreza Sadeghi, Luca Magagnin

E02-Three-Dimensional Electrodeposition and Electroless Deposition

Electrodeposition/Industrial Electrochemistry and Electrochemical Engineering

1098(Invited) Electrochemical Synthesis of High Strength Regular Metal Foams and 3D Micro-Lattices

Maxime Mieszala, Madoka Hasegawa, Stefano Mischler, Johann Michler, Laetitia Philippe

1099Microstructural Investigation of Pulse Electroplated Copper Trenches Deposited with Organic Additives

James Brandon Marro, Amrita Kapat, Taghi Darroudi, Chukwudi A. Okoro, Yaw S. Obeng, Kathleen A Richardson

1100Electrodeposition and Stacking to Form 3D Hierarchically Porous Structures

David B. Robinson, Gail F. Garcia, Ryan K. Nishimoto, Michael S. Bartsch, Christian L. Arrington, George M. Buffleben, Christopher G. Jones

1101Deposition of Pt Nanoparticles on Ni Foam Via Galvanic Displacement

Loreta Tamasauskaite-Tamasiunaite, Ausrine Zabielaite, Aldona Balciunaite, Benjaminas Sebeka, Irena Stalnioniene, Vytenis Buzas, Laurynas Maciulis, Liudas Tumonis, Eugenijus Norkus

1102Electroless Metallization of Stereolithographic Photocurable Resins for 3D Printing

Roberto Bernasconi, Caterina Credi, Gabriele Natale, Marco Tironi, Marinella Levi, Luca Magagnin

1103Characterization and Metrology of Gold and Copper Electroplated Stylus Ion Traps

Christian L. Arrington, Andrew E Hollowell, Jamin Ryan Pillars, Varshni Singh, Patrick Finnegan, Christopher St. John

1104Fabrication of Nano-Rod Structures By Cu Galvanic Displacement Reaction on Fe-Ni-Co Nanowires

Xiaohua Geng, Elizabeth J Podlaha

1105 3D Printing and Electroless Metallization of Microrobots for Biomedical Applications

Roberto Bernasconi, Caterina Credi, Marinella Levi, Luca Magagnin

1106Locomotive Studies on Electrodeposited Bimetallic Microtubular Motors for pH Sensing

James Guo Sheng Moo, Hong Wang, Martin Pumera

1107(Invited) Progress on Electroless Atomic Layer Deposition

John Lewellen Stickney, David M. Benson, Kaushik Jagannathan

1108Composition Control of Cu_2ZnSnS_4 Thin Films in Electrodeposition

Aiyue Tang, Feng Wang, Zhilin Li

1109Electroless Deposition of Platinum Using Multivalent Metal Ions As Reducing Agents

Eugenijus Norkus, Aldona Jagminiene, Ina Stankeviciene, Loreta Tamasauskaite-Tamasiunaite, Aniruddha Joi, Yezdi Dordi, Vytenis Buzas, Laurynas Maciulis, Liudas Tumonis

1110Magnetic Field and Substrate Effects on the Electrodeposition of High Magnetostrictive Cofe Films

Jamin Ryan Pillars, Eric Langlois, Christian L. Arrington, Todd Monson

1111First-Principle Theory to Understand Autocatalysis in Electroless Cu Deposition

Meng Zhao, Rohan Akolkar, Alfred B. Anderson

1112Area-Selective Electroless Deposition of Gold Nanostructures with Various Morphologies on Silicon Assisted By Focused Ion Beam Irradiation

Hiroki Itasaka, Masayuki Nishi, Masahiro Shimizu, Kazuyuki Hirao

1113Morphology and Electrical Properties of Copper Thin Films Electroplated on Ni/n^+-Si(100) for Silicon Solar Contact

Mourad Mebarki, Abderrahmane Moussi, Amor Azizi, Mohamed redha Khelladi, Linda Mahiou

1114Investigation on Process Parameters on the Adhesion of Electroless Ni-P Film on Silane Compound Modified Si Wafer

Chin Wei Hsu, Wei-Yan Wang, Tzu Chien Wei

1115Effect of Different Solvents on Aminosilane-Compound Modification and Its Influence on the Adhesion Between Electroless Nickel/Phosphorous Film and Silicon Wafer

Wei-Yan Wang, Chin Wei Hsu, Tzu Chien Wei

1116Enhanced Catalytic Efficiency and CO Tolerance of Novel Pt Nanostructures Prepared By Pulsed Electrodeposition for Fuel Oxidation Reaction

Po Chang Chen, Chen Kang Chuang, Tsung-Kuang Yeh

1117Electrodeposition of Three-Dimensional Vertically Aligned Nanotubes Array from Interfacial Gaps

Lichun Liu

1118The Influence of Blood Proteins on the Mobility of Self-Propelled Electrodeposited Microtubes

Hong Wang, Guanjia Zhao, Martin Pumera

1119Electroless Deposition of Cobalt-Tungsten-Boron Films from Glycine Containing Solutions As Barrier Layer Against Cu Diffusion

Eugenijus Norkus, Zita Sukackienė, Loreta Tamasauskaite-Tamasiunaite, Arnas Naujokaitis, Vitalija Jasulaitiene

1120Decoration of Fiber Structure Co with Pt or Au Nanoparticles for Catalytic Ppurposes

Ausrine Zabielaite, Kornelija Antanaviciute, Aldona Balciunaite, Loreta Tamasauskaite-Tamasiunaite, Eugenijus Norkus

1121Temperature Effect on Silver Electrodeposition in a Deep Eutectic Solvent

Jorge Aldana-González, Luis Botello, Maria Guadalupe Montes de Oca-Yemha, Jorge Mostany, Mario A. Romero-Romo, Elsa Arce-Estrada, Manuel Palomar-Pardavé

1122The Effect of Pressurized Carbon Dioxide in Cathodic Deposition of Metal Oxide Films

Tso-Fu Mark Chang, Chun-Yi Chen, Wei-Hao Lin, Yung Jung Hsu, Masato Sone

1123Pulse Electroplating of Au Films with Ultra High Strength

Chun-Yi Chen, Masaharu Yoshiba, Haochun Tang, Tso-Fu Mark Chang, Daisuke Yamane, Katsuyuki Machida, Kazuya Masu, Masato Sone

1124Effects of Organic Additives on Formation of Copper Pillar during Electroplating Process

Yu-Jin Lee, Woon-Young Lee, Dong-Ryul Lee, Sang-Hoon Jin, Min-Hyung Lee

1125Electrochemical Properties of Ni-TiO_2/NiO Nanocomposite in Amine-Containing Solutions at the Elevated Temperature

Seunghyun Kim, Ji Hyun Kim

1126The Role of Electrolyte Composition on Codeposited Ag and Cu

Ishak Karakaya, Fulya Ulu, Gökhan Demirci, Metehan Erdogan

F01-Industrial Electrochemistry and Electrochemical Engineering General Session

Industrial Electrochemistry and Electrochemical Engineering

1127(Industrial Electrochemistry and Electrochemical Engineering Division Student Achievement Award) Engineering the Ionic Polymer Phase Surface Properties of a PEM Fuel Cell Catalyst Layer

Regis Paul Dowd, Trung Van Nguyen

1128Pt/TiO_2-CN_X Gas-Diffusion Electrode Used in Electrodeposition of Manganese Dioxide for Saving Energy

Jing Tang, Huimin Meng

1129Fabrication of Photocatalytic Al-TiO_2 Coatings By Composite Electrodeposition and Anodization

Masao Miyake, Ayumu Takahashi, Takumi Ikenoue, Tetsuji Hirato

1130Electrochemical Formation of RE-Zn (RE=Dy, Nd) Alloys Using Liquid Zn Electrodes in a Molten LiCl-KCl System

Hirokazu Konishi, Hideki Ono, Eiichi Takeuchi, Toshiyuki Nohira, Tetsuo Oishi

1131Electropolishing of an Fe-Ni-Co Alloy in Acetic Acid-Perchloric Acid Mixture

Yasemin Aksu, Metehan Erdogan, Gökhan Demirci, Ishak Karakaya

1132Electrochemical Removal of NO_x on Pt-Ba Impregnated Lscf/GDC Electrode

Xi Wang, Xiang Yi Shi, Westermann Alexandre, Jean-Paul Viricelle, Mathilde Rieu, Philippe Vernoux

1133Electrochemical Fluorination of Uranium to UF_6

Michael Joe Martinez-Rodriguez, Luke Christopher Olson, Joshua R. Gray, Brenda Lee Garcia-Diaz

1134Role of Elastic Strain on Electrocatalysis of Hydrogen Evolution Reaction

Kai Yan, Alireza Khorshidi, Pradeep R. Guduru, Andrew A. Peterson

1135Analysis of a Hydrogen Pump Driven Refrigeration Cycle

Robert M. Darling

1136Electrochromic Device for Reversible Color Change Three Different Operating States

Kiryong Jeong, Jong-Lam Lee

1137Nickel Electrodeposits As a Model Material to Study Abrasive Waterjet Machining

Maxime Mieszala, Pablo Lozano Torrubia, Stefano Mischler, Dragos A. Axinte, Johann Michler, Laetitia Philippe

1138Electrochemical Mineralization of Synthetic Human Urine and Simultaneous H_2 generation from an Electrolysis Cell Containing a Ni(II)Cyclam-Modified Nanoparticulate TiO_2 Anode and a Pt Cathode

Silvia Viridiana-Aideé Munguía-Galván, Saacnhitee Murcio-Hernández, Tzayam Pérez-Segura, Silvia Gutiérrez-Granados, Gilberto Carreño, J. J. Perez, Fabricio Espejel-Ayala, Adrián Rodríguez-García, Juan Manríquez

1139(Science for Solving Society's Problems Challenge Grant Winner) In-Situ Electrochemical Generation of the Fenton Reagent for the Treatment of Human Wastewater

Luis Arturo Godinez Mora-Tovar, Francisco Javier Rodriguez Valadez, Orlando Garcia, Dennys Fernandez, Ana I. Zarate

1140Study of the Influence of the Operational Parameters on the Photo-Electro-Fenton Performance of an Industrial Waste-Water Treatment Prototype

Irma Robles, Luis Arturo Godinez Mora-Tovar

1141Quantifying Individual Potential Contributions for Hydrogen Production in the Hybrid Sulfur Electrolyzer

Taylor Reed Garrick, Alexander Gulledge, John A Staser, Brian C Benicewicz, John W. Weidner

1142Simulation Study of Electrolyte Flow and Slime Particle Transport in a Newly Designed Copper Electrorefining Cell

Weizhi Zeng, Michael L Free, Shijie Wang

1143Black Liquor Electrolysis for Hydrogen and Lignin Extraction

Raisa Costa Paes Oliveira, Maria Mateus, Diogo M.F. Santos

1144Nickel and Gold Coatings of Germanium and Kovar Substrates

Ishak Karakaya, Yasin Cetin, Gökhan Demirci, Metehan Erdogan

1145Electrocoagulation Process Coupled to an Advanced Oxidation Process (Ozonation) Applied to Industrial Wastewater

M. A. García-Morales, Julio César González Juárez, Carlos Barrera-Díaz, G. Roa-Morales, E. Martín del Campo Lopez, Paulina Daniela Sánchez Bobadilla

G01-More-than-Moore 3

Electronics and Photonics/Dielectric Science and Technology/Sensor

1146(Invited) Pixel-Parallel CMOS Image Sensors with 16-Bit AD Converters Developed By 3-D Integration of SOI Layers with Au/SiO_2 Hybrid Bonding

Masahide Goto, Kei Hagiwara, Yuki Honda, Masakazu Nanba, Yoshinori Iguchi, Takuya Saraya, Masaharu Kobayashi, Eiji Higurashi, Hiroshi Toshiyoshi, Toshiro Hiramoto

1147(Invited) A 1-mG MEMS Sensor

Daisuke Yamane, Toshifumi Konishi, Hiroshi Toshiyoshi, Kazuya Masu, Katsuyuki Machida

1148Light Sensing of a-Si:H pin diode - Wavelength and Intensity Effects

Kibum Kim, Yue Kuo

1149(Invited) Carbon Nanotube Field Effect Transistor for Biological Detection in Liquids

Natalie Olivia Victoria Plank, Han Yue Zheng, Omar A Alsager, Justin Mark Hodgkiss

1150Electrochemical Characterization of Synthetic Hybrid DNA Molecular Wires

Alaleh Golkar Narenji, Noah Goshi, Michael Coste, Dillon Burns, Raymond Lee, Katrina Ngo, Byron Purse, Sam Kassegne

1151(Invited) Engineering Interfaces for Added Functionality of Nanoelectronics

Christina A. Hacker, Sujitra Pookpanratana, Hyuk-Jae Jang, Curt A. Richter

1152(Invited) Fabrication of Implantable Glucose Fuel Cells on Silicon Wafers

Rafmag Cabrera, Isaac Weaver, Areen Banerjee, Rahul Sarpeshkar, Todd Thorsen

1153(Invited) More Than Moore Applications with Thin-Film-Transistors Array Substrates from Liquid Cristal Display: New Devices for Biological Cells Analyses

Agnes Tixier-Mita, Satoshi Ihida, Grant Alexander Cathcart, Faruk Azam Shaik, Hiroshi Toshiyoshi

1154(Invited) Emerging Ferroelectric Devices

Alexei Gruverman

1155(Invited) Comprehensive Assessment of Oxide Memristors As Post-CMOS Memory and Logic Devices

Xujiao Gao, Denis Mamaluy, Eric C. Cyr, Matthew J. Marinella

1156Memcapacitive Characteristics of Metal-Oxide-Semiconductor Capacitor Structures By Compositional Redistribution

Paul Yang, Young Jun Noh, Yoon-Jae Baek, Hong Zheng, Chi Jung Kang, Tae-Sik Yoon

1157Metal Oxide Thin Film Characterization for New Generation CMP Development

G. Bahar Basim, Ayse Karagoz

1158Influence of doping and tunneling interface stoichiometry on n+$In_{0.5}Ga_{0.5}As$/p+$GaAs_{0.5}Sb_{0.5}$ Esaki diode behavior

Salim El Kazzi, Alireza Alian, Caio Cesar Mendes Bordallo, Quentin Smets, Bastien Douhard, Olivier Richard, Ludovic Desplanque, Xavier Wallart, Anne Verhulst, Nadine Collaert, Clement Merckling, Marc Heyns, Aaron Thean

1159Scanning Probe Characterization of Memristors Based on a Li Intercalation Metal Oxide

Elliot James Fuller, Farid El Gabaly, Nicholas Ware, Raymond William Friddle, David R. Hughart, Matthew J. Marinella, Albert Alec Talin

1160(Invited) Near-Field Coupling Integration Technology

Tadahiro Kuroda

1161(Invited) Beyond-CMOS Device and Interconnect Technology Benchmarking Based on a Fast Cross-Layer Optimization Methodology

Chenyun Pan, Azad Naeemi

1162(Invited) 300GHz CMOS Wireless Communication with 32 Quadrature-Amplitude-Modulation Capability

Minoru Fujishima

1163(Invited) Hardware Security Considerations for More-THAN-Moore Platforms

Yaw S. Obeng

G02-Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 6

Electronics and Photonics

1164(Keynote) Challenges of 10 Nm and 7 Nm CMOS for Server and Mobile Applications

Rama Divakaruni, Vijay Narayanan

1165(Invited) Challenges and Solutions for Future IoT Semiconductor Technologies

Jamie Schaeffer

1166Introduction of a High Selectivity Etching Process with Advanced SiN_x Etch Gas in the Fabrication of FinFET Structures

Takashi Kojiri, Tomoyuki Suwa, Keiichi Hashimoto, Akinobu Teramoto, Rihito Kuroda, Shigetoshi Sugawa

1167(Invited) Vertical Nanowire FET Integration and Device Aspects

Anabela Veloso, Efraín Altamirano-Sánchez, Stephan Brus, B. T. Chan, Miroslav Cupak, Morin Dehan, Christie Delvaux, Katia Devriendt, Geert Eneman, Monique Ercken, Trong Huynh-Bao, Tsvetan Ivanov, Philippe Matagne, Clement Merckling, Vasile Paraschiv, Siva Ramesh, Erik Rosseel, Luc Rynders, Arturo Sibaja-Hernandez, Samuel Suhard, Zheng Tao, Emma Vecchio, Niamh Waldron, Dmitry Yakimets, Kristin De Meyer, Dan Mocuta, Nadine Collaert, Aaron Thean

1168(Invited) Evaluation of Stacked Nanowires Transistors for CMOS: Performance and Technology Opportunities

Loïc Gaben, Sylvain Barraud, Marie-Pierre Samson, Marie-Anne Jaud, Sébastien Martinie, Olivier Rozeau, Joris Lacord, Christian Vizioz, Christian Arvet, Jessy Bustos, Jacques-Alexandre Dallery, Sébastien Pauliac, Catherine Euvrard-Colnat, Viorel Balan, Cédric Perrot, Virginie Loup, Pascal Besson, Stéphane Monfray, Frédéric Boeuf, Thomas Skotnicki, Francis Balestra, Maud Vinet

1169(Invited) Progress in Process Technologies for SiC Power Devices

Tsunenobu Kimoto

1170(Invited) Effect of Low Carbon Concentration on Bulk Lifetime of Silicon Crystal

Mitsuo Higasa, Yuta Nagai, Satoko Nakagawa, Kazuhiko Kashima

1171(Invited) Intrinsic Reliability Assessment of 650V Rated AlGaN/GaN Based Power Devices : An Industry Perspective

Peter Moens, Abhishek Banerjee, Peter Coppens, Markus Caesar, Aurore Constant, Zilan Li, Steven Vandeweghe, Frederick Declercq, Balaji Padmanabhan, Woochul Jeon, Jia Guo, Ali Salih, Marnix Tack, Matteo Meneghini, Stefano Dalcanale, A Tajilli, Gaudenzio Meneghesso, Enrico Zanoni, Mike Uren, Serge Karboyan, Martin Kuball, Indranil Chatterjee

1172Dark Current Suppression of Germanium Photodiode Using Metal-Interlayer-Semiconductor-Metal Structure with TiO_2 interlayer

Hwan-Jun Zang, Hyun-Yong Yu

1173(Invited) TmSiO As a CMOS-Compatible High-k Dielectric

Eugenio Dentoni Litta, Per-Erik Hellström, Mikael Östling

1174Low Leakage Current Al_2O_3 Metal-Insulator-Metal Capacitors Formed By Atomic Layer Deposition at Optimized Process Temperature and O_2 Post Deposition Annealing

Yasumasa Koda, Hisaya Sugita, Tomoyuki Suwa, Rihito Kuroda, Tetsuya Goto, Akinobu Teramoto, Shigetoshi Sugawa

1175(Invited) Low-temperature Microwave-based Plasma Oxidation of Ge and Oxidation of Silicon followed by Plasma Nitridation

Wilfried Lerch, W. Kegel, N. Sacher, T. Schick, J. Niess, M. Czernohorsky, Stefan Riedel

1176(Invited) The (r)Evolution of the Junctionless Transistor

Ray Duffy

1177Formation of Low-Resistivity Metal/Germanium Contact with Ultra-Thin Interlayer and Plasma Oxidation for n-Channel Germanium FET

Gwang-Sik Kim, Seung-Hwan Kim, June Park, Sun-Woo Kim, Hyun-Yong Yu

1178(Invited) Pattern and Emissivity Insensitive Dopant Activation and Silicide Contact Formation Annealing in a Hot Wall Rapid Thermal Annealing System

Woo Sik Yoo

1179Height Uniformity of Micro-Bumps Electroplated on Thin Cu Seed Layers

Liu Yang, John Slabbekoorn, Mia Honore, Karen Stiers, Herbert Struyf, Philippe M Vereecken, Aleksandar Radisic

1180Application of Process Simulation for Comparison of Contactless and Conventional Electrodeposition Methods for 3D Packaging

Mingrui Zhao, Kyle Jakes, Kevin Luke, Jivaan Kishore, Roman Gouk, Steven Verhaverbeke, Farhang Shadman, Manish Keswani

1181Vapor Phase Self-Assembled Monolayers for CMOS Beol Barrier Layers

Tejas RAJENDRA Naik, M Ravikanth, Valipe RAMGOPAL Rao

1182(Invited) Graphene Plane Electrode for Low Power 3D Resistive Random Access Memory

Seunghyun Lee, Joon Sohn, Zizhen Jiang, Hong-Yu Chen, H. -S. Philip Wong

1183(Invited) Role of Interfaces in Achieving Self-Compliance Controlled Resistive Random Access Memory Devices for Low-Power Embedded Applications

Rashmi Jha, Wenchao Lu, Wenbo Chen

1184(Invited) III-V / Si Integration for Photonics

Johann Peter Reithmaier, Mohamed Benyoucef

1185Development of Characterization Platform Dedicated to Bio-Inspired Object at the Nanoscale

Corentin Carmignani, Aurélie Thuaire, Anaelle Rongier, Lucie Altamura, Christophe Brun, Patrick Reynaud, Emmanuel Rolland, Nadine David, Patrice Rannou, Vincent Forge, Thomas Ernst, Séverine Cheramy

1186A Thermal Method to Reduce the Polysilicon Resistance for Deep Submicron Integration Process

Xiang Li, Shi Xiang Liu, Xu Li Liu, Mun Loong Foong, Wei qiang Ye

1187Simulation of the Germanium-Tin Tunneling Field-Effect Transistors with a Ge Cap Layer: Improved Subthreshold Swing and I_{on}/I_{off} Ratio

Lei Liu, Renrong Liang, Jing Wang, Jun Xu

1188Comprehensive Characterization of Dual Implanted Silicon after Electrical Activation Annealing

Woo Sik Yoo, Bong Seok Jeon, Sang Deok Kim, Toshikazu Ishigaki, Kitaek Kang

1189Effect of Substrate Type on $CoSi_2$ Formation in Rapid Thermal Annealing

Eun Jung Kim, Jin Yul Lee, Sang Deok Kim, Han Sang Song, Seung Jin Yeom, Toshikazu Ishigaki, Kitaek Kang, Woo Sik Yoo

1190High Dopant Activation of Phosphorus in Ge Crystal with High-Temperature Implantation By Two-Step Microwave Annealing

Tzu-Lang Shih, Wen-Hsi Lee

1191Wet Chemical Etching Behavior Investigation for CMOS Shallow Trench Isolation (STI) Shape Control

Hsin Tai, Po-Cheng Chang, Hsu-Wen Ho, Hsin-Yi Liao, Ming-Chen Lu, Tzung-Hua Ying

1192Analysis of the Retention Characteristic in Three Dimensional Junction-Less Charge Trapping Memory

Dandan Jiang, Zhiliang Xia, Lei Jin, Xingqi Zou, Yu Zhang, Zhaoyun Tang, Xinkai Li, Zongliang Huo

1193High-K Metal-Gate Nanowire Junctionless Finfet with Nickelsilicide By Microwave Annealing

Wan-Ting Tsai, Yu-Hsien Lin

1194Improvement of Germanium Channel Nmosfet By Using Fluorine Co-Implant Methods

Ting- Han Chi, Yu-Hsien Lin, Wan-Ting Tsai, Hui-Hsuan Li

1195Novel Oxidants and Sources of Nitrogen for Atomic Layer Deposition

Daniel Alvarez, Jeffrey Spiegelman, Ed Heinlein, Russell Holmes, Chris Ramos, Mark Leo, Sean Webb

1196Study on the Gallium Antimonide (GaSb) Semiconductor Surface in Wet Chemical Solutions

Dongwan Seo, Jinhoon Lee, Jihoon Na, Sangwoo Lim

1197Crystallinity Evaluation of Low Temperature Polycrystalline Silicon Thin Film Using UV/Visible Raman Spectroscopy

Ryo Yokogawa, Kazuya Takahashi, Katsuhiko Komori, Yoshihiro Hirota, Naomi Sawamoto, Atsushi Ogura

1198Fabrication of Graphene/Porous Silicon Nitride Material for Field-Effect Transistors

Daohan Ge, Dongliang Qian, Guanggui Chen, Liqiang Zhang, Naifei Ren

1199High Performance Tri-Gate Germanium-on-Insulator Based Junctionless Nanowire Transistors

Chuanchuan Sun, Ren Rong Liang, Jing Wang, Jun Xu

1200Removal of Ion-Implanted Photoresist on GaAs Surface Using Organic Solvents

Eunseok Oh, Jihoon Na, Seunghyo Lee, Sangwoo Lim

1201Hot-Wire Chemical Vapour Deposition for Silicon Nitride Waveguides

Thalía Domínguez Bucio, Antulio Tarazona, Ali Z. Khokhar, Goran Z. Mashanovich, Frederic Y. Gardes

1202(Special Invited Talk) Transistors, Integrated Circuits and Nano-Technology: A Historical Review

Howard R. Huff

1203(Invited) Rapid In-Situ Carbon and Oxygen Cleaning of $In_{0.53}Ga_{0.47}As(001)$ and $Si_{0.5}Ge_{0.5}(110)$ Surfaces via a H_2 RF Downstream Plasma

Steven Wolf, Mary Edmonds, Ximan Jiang, Ravi Droopad, Naomi Yoshida, Lin Dong, Rohit Galatage, Shariq Siddiqui, Bhagawan Sahu, Andrew Kummel

1204Effect of Post Plasma Oxidation on Ge Gate Stacks Interface Formation

Sromana Mukhopadhyay, Shilpa Mitra, YI Ming Ding, K.L. Ganapathi, Durga Misra, Navakanta Bhat, Kandabara Tapily, Robert D. Clark, Steven Consiglio, Cory S. Wajda, Gert J. Leusink

1205(Invited) CMOS Compatible High Performance IIIV Devices Opportunities and Challenges

Yanning Sun, Kuen-Ting Shiu, Cheng-Wei Cheng, Amlan Majumdar, Robert Bruce, Jeng-bang Yau, Damon Farmer, Yu Zhu, Marinus Hopstaken, Martin M. Frank, Takashi Ando, Ko-tao Lee, John Rozen, Devendra K. Sadana, Vijay Narayanan, Renee T. Mo, Effendi Leobandung

1206Source/Drain Contact Resistance Reduction through Al-Doped ZnO Interlayer to Metal-Interlayer-GaAs Contact Structure

Seung-Hwan Kim, Gwang-Sik Kim, Sun-Woo Kim, Hyun-Yong Yu

1207Oxidation Characteristics of InAs Surface in Wet Chemical Treatment

Jihoon Na, Dongwan Seo, Jinhoon Lee, Sangwoo Lim

1208Study of Electrostatics and Transport Properties of Multigate Graded Nanowire Channel MOSFETs

Quazi D. M. Khosru, Saeed Uz Zaman Khan, Kanak Datta

1209Determination of Antiphase Domain Boundary Annihilation Rate in GaAs on Si(001) and the Influence of MOCVD Growth Temperature

Caleb Shuan Chia Barrett, Thomas Patrick Martin, Xin-Yu Bao, Patrick Martin, Errol Sanchez, Kevin Scott Jones

H01-Wide Bandgap Semiconductor Materials and Devices 17

Electronics and Photonics

1210(Electronics and Photonics Division Award) High Power Nitride Based Field Effect Transistors

Michael Shur

1211(Invited) Basic Properties of h-BN Epilayers

Hongxing Jiang, Jingyu Lin

1212(Invited) Diamond - the Unknowns and Challenges to Make It Work for GaN Electronics

Martin Kuball, Julian Anaya, Dong Liu, Roland Baranyai, Huarui Sun, James W Pomeroy

1213(Invited) Challenges and Opportunities for GaN on Diamond Devices

Samuel Graham

1214(Invited) Electrothermal Performance Optimization of III-Nitride Hemts Capped with Nanocrystalline Diamond

Marko J. Tadjer, Travis J Anderson, Tatyana I Feygelson, Karl D Hobart, Mario G. Ancona, Andrew D. Koehler, Jennifer K Hite, Virginia D. Wheeler, Bradford B Pate, Francis J Kub, Charles R. Eddy

1215(Invited) Heterogeneous Integration of III-V Semiconductors on Silicon for Electronics

Rinus Lee

1216Investigation of Nucleation and Intermixing at Hetero-Interface in III-Nitride-4H-SiC Structures

Ryan Wade Enck, Anand V Sampath, Roy Chung, Daniel B Knorr, Gregory A Garrett, Meredith L Reed

1217(Invited) Effects of Off-State Stress Voltage and Time on the Recovery of on-Resistance (Ron) of AlGaN/GaN MIS-Hemts

Jen-Inn Chyi, Ching-Chuan Shiue

1218(Invited) The Use of Sub-Bandgap Optical Pumping to Identify Defects in AlGaN/GaN High Electron Mobility Transistors

Fan Ren

1219Effects of Charge Passivation on GaN HEMT

Shih Chien Liu, Chung Kai Huang, Edward Yi Chang

1220Comparison of SiN_x and AlN Passivations for AlGaN/GaN Hemts

Song Yang, Lei Lei, Kun Yu, Anping Zhang, Kevin J Chen

1221Characterization of GaN Device Interconnect Metallization Reliability

Steve Kilgore, Darrell Hill, Bruce Green

1222Electrochemical Characterization of Surface States at the GaN/Electrolyte Interface

Andrea Winnerl, Jose A. Garrido, Martin Stutzmann

1223(Invited) Recent Progress in GaN Power Devices with BV > 1200 V

Huili Grace Xing, Kazuki Nomoto, Zongyang Hu, Bo Song, Mingda Zhu, Debdeep Jena

1224GaN Based Vertical Transistors on GaN Substrates

Anping Zhang, Xing Lu, Lei Lei, Yong Zhang, Song Yang, Kun Yu, Shahid Makhdoom, Xuhui Wang, Ting Zhou

1225High Performance AlGaN/GaN Hemts on GaN Substrates

Lei Lei, Song Yang, Kun Yu, Yong Zhang, Shahid Makhdoom, Xuhui Wang, Ting Zhou, Xing Lu, Anping Zhang

1226(Invited) Room Temperature Spin Electronic Devices Based on Mn and Cr Doped GaN

Nadia A El-Masry, Salah M Bedair

1227(Invited) Electric-Double-Layer-Gated AlGaN/GaN High Electron Mobility Transistors (HEMTs) for Biosensors

Chia-Ho Chu, Indu Sarangadharan, Abiral Regmi, Yen-Wen Chen, Chen-Pin Hsu, Yu-Lin Wang

1228(Invited) Improved GaN Based Hydrogen Sensors

Kwang Hyeon Baik, Jimin Kim, Soohwan Jang

1229(Invited) Fundamental Differences Between the Traditional III-V Compounds and Nitride Semiconductors

Theodore D. Moustakas

1230(Invited) Electrically Pumped Lasers and Light Emitting Diodes in the Ultraviolet-C Band with AlGaN Nanowires

Zetian Mi, Songrui Zhao

1231(Invited) Advantages and Limitations of AlGaN-Based UV Optoelectronics on AlN Substrates

Ramon Collazo, Isaac Bryan, Zachary Bryan, Milena Bobea, Dorian Alden, Seiji Mita, Benjamin Gaddy, James Tweedie, Alexander Franke, Ronny Kirste, Michael Gerhold, Doug Irving, Zlatko Sitar

1232(Invited) Semiconductor Nanowires for Optoelectronics and Energy Applications

Chennupati Jagadish

1233Growth of GaN/InGaN Films and Heterostructures Via Super-Atmospheric MOCVD

John Robert Krause, Edward Brittain Stokes

1234(Invited) Photon Managements By Employing Nanostructures for Light Emission Diodes

Jr-Hau He

1235(Invited) New Directions in GaN Photonics enabled by Electrochemical Processes

Cheng Zhang, Ge Yuan, Kanglin Xiong, Sung Hyun Park, Jung Han

1236Luminescence of Eu^{3+} in a Mullite-Type Host Material $Bi_2Ga_2Al_2O_9$

Hansnath Tiwari, U V Varadaraju

1237Recent Advances on the Optical Properties of Zinc-Doped Antimony Sulphide (Sb_2S_3) Thin Films

Debdeep Jena

1246Effect of Light Intensity and Wavelength on a-Ingazno Thin Film Transistors Under Negative Bias Illumination Stress

Woo-Sic Kim, Yeol-hyeong Lee, Yong-Jung Cho, Byeong-Koo Kim, Kyung Tae Park, Ohyun Kim

1247Mechanism of Hump Phenomenon in the I-V Characteristics of Amorphous in-Ga-Zn-O Thin Film Transistors Under Positive Bias and Illumination Stress

Yong-Jung Cho, Yeol-hyeong Lee, Woo-Sic Kim, Byeong-Koo Kim, Kyung Tae Park, Ohyun Kim

1248Effect of the Deposition Temperature and Thermal-Annealing on the I-V Characteristics of Low-Temperature-Processed Polycrystalline ZnO and Amorphous InGaZnO TFTs

Alireza Tari, William S. Wong

1249Scaling Behavior of Amorphous in-Zn-O Thin Film Transistors with High Mobility over 35 cm^2/Vsec

Sunghwan Lee, David C. Paine

1250Investigation on Alumina Passivation for Improved IGZO TFT Performance

Tarun Mudgal, Nicholas Edwards, Prashant Ganesh, Anish Bharadwaj, Robert G. Manley, Karl D Hirschman

1251Ultra-Small ZnO Nanoparticles for Charge Storage in Mos-Memory Devices

Nazek El-Atab, Ammar Nayfeh

1252Optical and Electric Properties of Cu-Doped ZnO Films Grown on MgO (100) Substrate

Ming-Yuan Ho, Meng Chieh Wen, Liuwen Chang, Mitch Chou

1253Electrodeposition of Doped ZnO Layer Using Three Different Dopant (Properties and structure)

Mahfouz Ali Saeed

1254ZnO Nanowires Synthesis and Characterization

Ping-Hsin Tsai, Chiu-yen Wang

1255Anchoring Molecules on the Surface of ZnO and Effects on Intergranular Transport Properties

Jacinthe Gamon, Philippe Barboux, Domitille Giaume, Thierry Le Mercier, Tangui Le Bahers

1256Role of Defects in Enhancing the Electrochemical Properties of Transition Metal Oxide

Vidhya Chakrapani, Qi Wang

1257Formation and Characterization of Copper Oxide Nanowires through Thermal Oxidation

Hsiu-Ming Hsu, Kuo-Chang Lu

1258TiO_2 Nanoparticles Synthesis from a Ti Alloy Foil By Electrochemical Method in Aqueous Electrolyte

David Ortega-Díaz, Dennys Fernandez, Ernesto Pelaez-Abellan

1259The SnO_2 nanowires Synthesis and Characterization

Fang-Chun Lu, Chiu-yen Wang

1260Investigation of SiC Polytypes for PVT Process Control Using Ultraviolet Fluorescence Technique

Seong Min Jeong, Ji-Young Yoon, Hyoung-Seuk Choi, Dae-Seop Byeon, Eunjin Jung, Yong Jin Kwon, Jungyu Kim, Younghee Kim, Won Seon Seo, Myung Hyun Lee

1261Hardness Improvement of Chalcogenide Glasses

Bong Je Park

1262Thermal-Structural Optimization of Light with LED Packaging

Liqiang Zhang, Daohan Ge, Yongli Li, X.D. Zhu

1263The Integration of Functional Oxide Thin Film with GaAs By Laser Molecular Beam Epitaxy

Huang Wen

1264Mechanical Analysis of Stretchable AlGaN/GaN High Electron Mobility Transistors

Randy P. Tompkins, Isra Mahaboob, Shadi Shahedipour-Sandvik, Nathan Lazarus

1265Application of TiO_2 Nanowires As Wide Gap Semiconductor Material in the Heterogeneous Catalysis of Benzophenone-4

Francisco Díaz, Francisco Márquez, Loraine Soto-Vázquez, Keila Rivera, Frankie Rolón

1266Effect of Ba on Spectral Broadening of Blue $Sr_5(PO_4)_3cl:Ce^{3+}$ phosphor for a High Color-Rendering Index

Gemechu Deressa

H02-Solid-State Electronics and Photonics in Biology and Medicine 3

Electronics and Photonics/Sensor

1267(Invited) Nanoelectronic Heterodyne Sensor: A New Electronic Sensing Paradigm

Zhaohui Zhong

1268(Invited) Electrostatic and Electrochemical Nature of Liquid-Gated Electric-Double-Layer Transistors Based on Oxide Semiconductors

Hongtao Yuan

1269The CNT network biosensor array for a general immunoassay platform

Jaeheung Lim, Hoseok Lee, Seongwook Choi, Won Cheol Lee, Young June Park

1270(Invited) Why Are Nanowire Biofets More Sensitive Than Their Large-Scale Counterparts?

Kaveh Shoorideh, Chi On Chui

1271(Invited) Oxide Neuron Transistor for High-Performance Biochemical Sensors

Qing Wan, Ning Liu, Yi Shi

1272Direct Detection of NT- Pro BNP As a Cardiac Biomarker Using High Electron Mobility Transistors in Physiological Salt Environment

Abiral Regmi, Indu Sarangadharan, Yan Wen Chen, Chen-Pin Hsu, Yu-Lin Wang

1273An Multifuntional Micro-Pump for Sample Selection Based on Low-Voltage Electrokinetic Mechanism

Yan-Jie Liao, Shiang-Chi Lin, Chia-Hong Gao, Chih-Ting Lin

1274A Novel and Robust Packaing Technology for Miniaturized FET-Based Biosensors with Microfluidic Channels

Chen-Pin Hsu, Pei-Chi Chen, Yu-Lin Wang

1275(Invited) Integration of Functional Coatings with Fiber Optics for Chemical and Medical Sensing Applications

Minghong Yang, Feng Xiang, Jixiang Dai

1276(Invited) A Frequency Domain Optofluidics Dissolved Oxygen Sensor with Enhanced Sensitivity for Water Monitoring

Eric Mahoney, Fei Du, HuanHsuan Hsu, Ravi Selvaganapathy, Qiyin Fang

1277(Invited) A Versatile Fabrication Platform for Rapid Prototyping of Biosensors

Christine Gabardo, Chris Adams-McGavin, Jie Yang, Barnabas Fung, Nathaniel Smith, Leyla Soleymani

1278(Invited) Modulating the Activity of Protein Functionalized Gold Nanoparticles

Feng Liu, Hongwei Wang, Lin Yuan, Hong Chen

1279Use of Metal Nanostructure Arrays to Develop Flexible Biosensors for Rapid Point-of-Care Diagnosis Device

Szu-Ying Li, Shang-Yi Yi, Dehui Wan

1280(Invited) Self-Powered, Wireless Medical Sensor and Devices

Zhou Li

1281(Invited) A Soft Approach to Electronics: From Stretchable Systems to 3D Structures

Sheng Xu

1282Grating-Structured Freestanding Triboelectric-Layer Nanogenerator for Harvesting Biomechanical Energy

Yannan Xie

1283Preparation of Highly Active Au/Pd Nanocatalysts for Self-Powered Sensing Applications

Ting-Wei Chang, Yun-Ting Jao, Zong-Hong Lin

1284Development of Functional Triboelectric Nanogenerators for Antibacterial Applications

Yi-Yun Ke, Ting-Mao Chou, Zong-Hong Lin

1285(Invited) Growth of Vertically Aligned Piezoelectric Diphenylalanine Peptide Microrods for Energy Harvesting

Vu Nguyen, Kory Jenkins, Rusen Yang

1286Development of Biocompatible Triboelectric Nanogenerators By Using Polypeptides As the Contact Materials

Chuan-Hua Chen, Yu-Hsiang Tsao, Zong-Hong Lin

1287Tellurium Nanowire Arrays-Based Nanogenerators for Thermal Energy Harvesting

Ying-Chun Li, Zong-Hong Lin

1288Single- and Few-Layers $MoSe_2$ Nanoflowers: Synthesis, Characterization, and Their Piezoresponse

Mei Hsuan Wu, Jyh Ming Wu

H03-Properties and Applications of 2-Dimensional Layered Materials

Electronics and Photonics/Dielectric Science and Technology/Nanocarbons

1289Mo-Based Transition-Metal-Dichalcogenide Junctionless Field-Effect-Transistors

Gioele Mirabelli, Ray Duffy, P. K. Hurley, Scott Monaghan, Karim Cherkaoui, Michael Schmidt, Brendan Sheehan, Ian M Povey, Melissa McCarthy, Roger Nagle, Alan Bell

1290(Invited) 2D Van Der Waals Crystals and Heterostructures for Smart Life

Kaustav Banerjee

1291(invited) 2-Dimensional Layered Materials for Si Technology

Hyeon-Jin Shin

1292(Invited) 2D Semiconductor Electronics: Advances, Challenges and Opportunities

Ali Javey

1293(Invited) Mixed Dimensional Nanoelectronic Heterostructures

Mark C. Hersam

1294(Invited) TMD Materials Challenges: Defects, Impurities, Passivation and Interfaces

Robert M Wallace

1295Layered Semiconductor Materials and Device Applications

Debdeep Jena

1296(Invited) Contacts to and Contact-Less Characterization of Transition Metal Dichalcogenides: Challenges Abound

Ludwig Bartels

1297(Invited) Properties and Applications of 2-Dimensional Layered Materials

Georg S. Duesberg

1298(Invited) An Overview of Doping Studies in MoS2

Kevin Scott Jones, Scott Perry, Ryan Murray, Katheryn Hynes, Xueying Zhao

1299(Invited) Transition Metal Dichalcogenide Monolayers As Quantum Wells

Taishi Takenobu

1300Interpenetrated Graphene/WSe2 Lateral Heterostructures for Barrierless Ohmic-Contacted p-FETs

Hao-Ling Tang, Ming-Hui Chiu, Chien-Chih Tseng, Chen-Hsin Lien, Lain-Jong Li

1301Band Alignment in the Single-Layer MoS2/WSe2 Heterojunction

Lain-Jong Li, Ming-Hui Chiu, Wei-Hsuan Tseng, Hung-Wei Shiu, Chia-Hao Chen, Chih-I Wu

1302Molybdenum Disulfide Motors Exhibiting Self-Exfoliation on the Surface of Water

Hong Wang, Zdenek Sofer, James Guo Sheng Moo, Martin Pumera

1303Layered Transition Metal Dichalcogenides As Electrocatalysts for Hydrogen Evolution and Their Trends Emerging from Electrochemical Treatment

Xinyi Chia, Adriano Ambrosi, Zdenek Sofer, Jan Luxa, Martin Pumera

1304Perovskite Solar Cells with Two Dimensional Materials As Hole Extraction Layer

Soo Young Kim, Yu Geun Kim, Jeong Hyeon Oh

1305A Controllable Method for Electrochemical Deposition Formed Crystalline MoS_2 As a Counter Electrode for Dye-Sensitized Solar Cells

Chao-Kuang Cheng, Che-Hsien Lin, Tsung-Kuang Yeh, Chuen-Horng Tsai, Chien-Kuo Hsieh

1306Pseudocapacitive Electrodes Produced By Oxidant-Free Polymerization of Pyrrole Between the Layers of 2D Titanium Carbide (MXene)

Muhammad Boota, Babak Anasori, Cooper Voigt, Meng-Qiang Zhao, Michel W. Barsoum, Yury Gogotsi

1307Black Phosphorus: New Opportunities in Electronic Device Applications

Demin Yin, Youngki Yoon

1308(Invited) Phosphorene Transistors - a Brief Review

Kuanchen Xiong, Xi Luo, James C. M. Hwang

1309(Invited) Strain Engineering in Ultrathin Black Phosphorus

Yanyong Li, Shu Ping Lau

1310(Invited) Novel Electronic and Photonic Applications of Anisotropic Black Phosphorus

Han Wang

1311(Invited) Controlling the Band Structure of Black Phosphorus

Keun Su Kim

1312(Invited) Growth of Hexagonal Boron Nitride and Its in-Plane Heterostructures with Graphene

Hyeon Suk Shin

1313Simultaneous Intercalation and Oxidant-Free Polymerization of Pyrrole Between 2D Titanium Carbide (MXene) for High Performance Pseudocapacitive Electrodes

Muhammad Boota, Babak Anasori, Cooper Voigt, Meng-Qiang Zhao, Michel W. Barsoum, Yury Gogotsi

1314(Invited) Effects of Van Der Waals Interaction in 2D Layered Material FETs and Their Device Performance Benchmark

Gengchiau Liang

1315(Invited) Interplay of Charge and Lattice Distortion in Few Layers of Transition Metal Dichalcogenides

Mei-Yin Chou

1316(Invited) Predictive Modeling in 2D Materials: Morphology, Defects, Synthesis

Boris I. Yakobson

1317(Invited) Spin-Valley Coupling in Monolayer Transition Metal Dichalcogenides

Xiaodong Cui

1318(Invited) Graphene Plasmonics: Plasmon-Plasmon Hybridization and Chemical Sensing

Damon Farmer, Phaedon Avouris, Shu-Jen Han

1319(Invited) Direct Template-Less Synthesis of Oriented Sub-10 Nm Semiconducting Graphene Nanoribbons with Smooth Armchair Edges on Ge(001)

Michael S Arnold

1320Low-Resistance Contacts for Single-Layered MoS2 n-FETs By Hydrogen Plasma

Ang-Yu Lu, Chia-Chin Cheng, Min-Cheng Chen, Ming-Yang Li, Ming-Hui Chiu, Chang-Lung Hsu, Jing-Kai Huang, Yumeng Shi, Lain-Jong Li

1321Passivating Defects and Tunning the Schottky Barrier for Two-Dimensional Semiconductors

Yuanyue Liu, Pauls Stradins, Suhuai Wei

1322Novel Iron Bismuth Oxychloride Nanosheets for Lithium Ion Batteries

Yoon Myung, Jaewon Choi, Fei Wu, Sriya Banerjee, Eric Majzoub, Parag Banerjee

1323(Invited) Designing Two-Dimensional Hybrid Materials for Electrochemical Energy Storage

Guihua Yu, Lele Peng, Yue Zhu

1324(Invited) Mechanical Energy Harvesting Using Triboelectric/Piezoelectric Properties from Two-Dimensional Materials

Sang-Woo Kim

1325(Invited) Synthesis and Applications of Novel Two-Dimensional Nanomaterials

Hua Zhang

1326(Invited) 2D Materials for Electrochemical Applications

Manish Chhowalla

1327(Invited) Atomically Thin Two-Dimensional Organic-Inorganic Hybrid Perovskites

Letian Dou, Andrew Wong, Yi Yu, Peidong Yang

1328(Invited) Liquid-Phase Exfoliated Two-Dimensional Nanosheets: From Large Scale Production to Energy Storage Applcations

Valeria Nicolosi

1329(Invited) Interesting 1-D and 2-D Phases of MoS_2

Kian Ping Loh

1330(Invited) 2D Materials for Wearable Electronics

Jong-Hyun Ahn

1331(Invited) Defect Engineering in 2-Dimensional Materials: From Theory to Applications

Maurcio Terrones

1332(Invited) Two-Dimensional Layers: The Synthesis and Properties of Graphene and Beyond

Joshua A Robinson

1333Observation of Two Dimensional Metallic Surface States and Metal to Semiconductor Transition on Low Dimensional Polar Thin Films

Fei Wu, Alireza Faghaninia, Cynthia Lo, Parag Banerjee

1334Electrodeposition and Capacitance of WS_2 Thin Films Onto ITO and Glassy Carbon from Aqueous and Non-Aqueous Electrolytes

Li Fan, Ian Ivar Suni

1335Structural and Electrical Investigation of MoS_2 Thin Films Formed By Thermal Assisted Conversion of Mo Metal

Ray Duffy, Patrick Foley, Bruno Filippone, Gioele Mirabelli, Dan O'Connell, Brendan Sheehan, Patrick Carolan, Michael Schmidt, Karim Cherkaoui, Riley Gatensby, Toby Hallam, Georg S. Duesberg, Roger Nagle, P. K. Hurley

1336Effects of Intercalation on the Electronic Properties of Multilayer Tmdc Materials

Quazi D. M. Khosru, Kanak Datta

I01-State-of-the-Art Invited Tutorials on Model/Experiment Coupling in Low Temperature Fuel Cells

Energy Technology/Industrial Electrochemistry and Electrochemical Engineering/Physical and Analytical Electrochemistry

1337(Invited) Modeling and Control of Pemfcs with Dead-Ended Anodes

Jason B Siegel, Anna G Stefanopoulou

1338(Invited) Understanding Cathodes for Solid Acid Fuel Cells By Coupling FIB-SEM 3D Reconstruction with Mathematical Modeling

Alexander B. Papandrew, Ondrej Dyck, Diana Constanza Orozco, Mengkun Tian, Ramez A. Elgammal, Gerd Duscher, Thomas A. Zawodzinski

1339(Invited) A Systematic Approach to Develop and Validate Models for the Design of Membrane Electrode Assemblies

Andreas Michael Vincent Putz, Marc Secanell

1340(Invited) Elucidating PEMFC Voltage Loss Contributions Via Mathematical Modeling and Differential Cell Testing

Wenbin Gu, Srikanth Arisetty, Swami Kumaraguru, Mark Mathias

1341(Invited) Structure-to-Property Correlations for Pemfcs Electrocatalysts Based on Chemistry and Morphology of Catalysts and Catalyst Layers

Kateryna Artyushkova

1342(Invited) Conductivity and Relaxation Phenomena in Ion Conducting Materials By Broadband Electric Spectroscopy

Vito Di Noto

1343(Invited) Coupling of Mechanical and Transport Phenomena in Ionomers

Priyamvada Goyal, Charles W Monroe

1344(Invited) Numerical Modeling of the Growth of Fatigue Cracks in PFSA Membranes

Michael H Santare, Anette M Karlsson, Guoliang Ding, Ahmet Kusoglu

I02-Ionic and Mixed Conducting Ceramics 10

High Temperature Materials/Energy Technology

1345The ARPA-E REBELS Program: Advances and Challenges after 1.5 Years of Research

Paul S. Albertus, Grigorii S. Soloveichik, John R. Tuttle, Scott Joseph Litzelman, Mark J. Pouy

1346(Science for Solving Society's Problems Challenge Grant Winner) Sustainable Water Treatment Using an SOFC-Based Combined Heat and Power System

Thomas H Hays, Eric D Wachsman

1347Electrochemical and Mechanical Properties of a Newly Designed Anode Supported SOFC

Wanbing Guan, Jianxin Wang, Rong Yu, Xiao-Dong Zhou

1348Solid Oxide Fuel Cell Technology Development at FCE

Alireza Torabi, Joseph Barton, Carl Willman, Hossein Ghezel-Ayagh, Eric Tang, Michael Pastula

1349Measuring Thermochemical Energy Storage Capacity with Redox Cycles of Doped-CaMnO3

Luca Imponenti, Kevin J Albrecht, Robert J. Braun, Gregory S Jackson

1350Mixed Conductors under Light: On the Way to Solid Oxide Photo-Electrochemical Cells

Juergen Fleig, Gregor Walch, Georg Christoph Brunauer, Bernhard Rotter, Esmaeil Esmaeli, Johann Summhammer, Alexander Karl Opitz, Karl Ponweiser

1351(Invited) Dense Gas Separation Membranes - Current Status and Future Challenges

Peter Vang Hendriksen, Simona Ovtar, Steven Pirou, Astri Bjørnetun Haugen, Wolff-Ragnar Kiebach, Shiyang Cheng, Jonas Gurauskis, Andreas Kaiser

1352Composite Ceramic-Metallic Hydrogen Separation Membranes: $BaCe_{0.8}Y_{0.2}O_{3-D}$ / Cu

Sandrine Ricote, Wade A Rosensteel, Hanping Ding, Libin Lei, Fanglin (Frank) Chen, Neal P Sullivan

1353Study of the Stability and Protonic Transport of $BaCe_{0.8}M_{0.2}O_{3-\hat{i}'}$ - $Ce_{0.8}M_{0.2}O_{2-\hat{i}'}$ (M= Y, Eu, Sm, Tb, Gd, Nd) Dual-Phase Membranes for Operation in Catalytic Membrane Reactors

Mariya E. Ivanova, Sonia Escolastico, Maria Balaguer, Yoo Jung Sohn, Jose M. Serra, Wilhelm A. Meulenberg, Olivier Guillon

1354Influence of a $La_{0.6}Sr_{0.4}CoO_{3-\delta}$ Functional Layer on $(Ba_{0.5}Sr_{0.5})(Co_{0.8}Fe_{0.2})O_{3-\delta}$ Oxygen Transport Membranes (OTMs)

Lana-Simone Unger, Matthias Meffert, Virginia Wilde, Heike Störmer, Christian Niedrig, Wolfgang Menesklou, Stefan F. Wagner, Dagmar Gerthsen, Ellen Ivers-Tiffée

1355Oxygen Semi Permeation, Surface Exchange and Oxygen Diffusion Study of $CaTi_{0.9}Fe_{0.1}O_{3-\delta}$ Membrane

Corinne Salles, M. C. Steil, Jacques Fouletier, Daniel Marinha

1356(Invited) Effects of Microstructure on Surface Segregation: Role of Grain Boundaries

Helena Téllez, John Druce, Tatsumi Ishihara, John A. Kilner

1357(Invited) Surface Composition and Oxygen Exchange Properties of Alkaline Earth-Free Perovskites

John Druce, Helena Téllez, Tatsumi Ishihara, John A. Kilner

1358Reaction Distribution in Mixed-Conducting SOFC Cathodes Investigated with Patterned Thin Film Electrodes

Koji Amezawa, Yoshinobu Fujimaki, Yusuke Shindo, Takashi Nakamura, Fumitada Iguchi, Keiji Yashiro, Hiroo Yugami, Tatsuya Kawada, Kiyofumi Nitta, Yasuko Terada

1359Cobalt-Free Mixed Conducting Ba0.95La0.05FeO3-δ Thin Films As Cathodes for Intermediate-Temperature Solid Oxide Fuel Cells

Francesco Ciucci

1360Tailoring Electrode Materials for Proton-Conducting Solid Oxide Fuel/Electrolysis Cells with Chemically Stable $BaZrO_3$ Electrolyte

Lei Bi, Enrico Traversa

1361$Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_3$ Cathode for Intermediate Temperature Proton-Conducting Solid Oxide Fuel Cells

Shichen Sun, Zhe Cheng

1362(Invited) Intrinsic Oxygen Surface Exchange Resistance Measurements on Mixed Ionic Electronic Conducting Infiltrate Nanoparticles

Theodore E. Burye, Jason D. Nicholas

1363(High Temperature Materials Division J. Bruce Wagner, Jr. Award)Oxygen Non-Stoichiometry of La, Yb, Y, and Ca Doped Cerium Oxide and the Stoichiometric Expansion Coefficient of Yb, Y, and Ca Doped Cerium Oxide

Sean R. Bishop

1364(Invited) Nature of MIEC Cathode/Electrolyte Interfaces

Ellen Ivers-Tiffée, Julian Szász, Florian Wankmüller, Virginia Wilde, Heike Störmer, Dagmar Gerthsen, André Weber

1365A Coupled Experimental/Numerical Approach for Tuning High-Performing SOFC-Cathode

Ozden Celikbilek, David Jauffres, Laurent Dessemond, Mónica Burriel, Christophe L Martin, Elisabeth Djurado

1366New Hypothesis for SOFC Ceramic Oxygen Electrode Mechanisms

Mogens Bjerg Mogensen, Christodoulos Chatzichristodoulou, Christopher Graves, Karin Vels Hansen, Kent Kammer Hansen, Anne Hauch, Torben Jacobsen, Kion Norrman

1367Performance and Degradation of SOFC Cathodes at Reduced Temperature

Christopher Pellegrinelli, Yi-Lin Huang, Joshua A. Taillon, Lourdes G. Salamanca-Riba, Eric D. Wachsman

1368Oxygen Reduction Reaction Kinetics of $PrBaCo_2O_{5+}$ As SOFC Cathode

Nan Zhang, Wenyuan Li, Xingbo Liu

1369Electrochemical Performance and Durability of $(Pr_{1-x}Nd_x)_2NiO_4$ As the Cathode for Solid Oxide Fuel Cells

Emir Dogdibegovic, Wanbing Guan, Christopher J. Wright, Xiao-Dong Zhou

1370Chromium Poisoning Effects on Surface Exchange Kinetics of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-X}$

Yi-Lin Huang, Christopher Pellegrinelli, Chunyan Xiong, Eric D. Wachsman

1371Thermodynamically and Electrochemically Activated Oxygen Surface Exchange Process in Lscf As Solid Oxide Fuel Cathode

Xinxin Zhang, Xingbo Liu

1372Microstructural Modelling and Simulation of Mixed Conducting SOFC Cathodes

Jochen Joos, Thomas Carraro, André Weber, Ellen Ivers-Tiffée

1373Electrochemical Reduction of NO_2

Jing Shao, Peter Holtappels, Kent Kammer Hansen

1374Thermal Properties of Perovskite-Type Oxides $La_{0.6}Sr_{0.4}Co_{1-X}Fe_xO_{3-\delta}$ $(0 \leq x \leq 1.0)$

Yu-Cheol Shin, Shin-ichi Hashimoto, Keiji Yashiro, Koji Amezawa, Tatsuya Kawada

1375Nanoparticle Synthesis and Oxygen Anion Diffusion in Double Perovskite $GdBaCo_{2-x}Fe_xO_{5+\delta}$ Electrodes for SOFC

Uzma Anjum, Nafeesa Khatoon, Meryam Sardar, Manish Agarwal, Saumye Vashishtha, M Ali Haider

1376Metal Oxide Nanofiber Calcination Studied By Environmental TEM

Wenjing Zhang, Søren Bredmose Simonsen

1377(Invited) Studies of Hydride Ion Conduction

John T. S. Irvine

1378(Invited) Overview on the Application of Solid State Electrolytes in Li-Ion Batteries and Beyond

Jie Xiao

1379The Fabrication of Garnet-Type $Li_7La_3Zr_2O_{12}$ Solid Electrolyte Materials

Xingxing Zhang, Jeff W. Fergus

1380Thermal and Chemical Expansion of Proton-Conducting Ceramics $BaCe_xZr_{0.9-x}Y_{0.1}O_{3-d}$ (x=0 and 0.2)

Grant Hudish, Sandrine Ricote, Grover Coors

1381Correlation Studies of Electrochemical and Crystallographic Properties on SOFC and Soec Related Materials By Simultaneous EIS and XRD in-Operando Measurements

Federico Napolitano, Alejandra Montenegro-Hernández, Juan Felipe Basbus, Mauricio Damián Arce, Liliana Veronica Mogni, Adriana Serquis

1382(Invited) Ion Conducting Oxides for Electrochemical Energy Conversion and Storage

Eric D. Wachsman

1383(Invited) Probing Oxide Ion Transport in Fluorite and Perovskite Oxides for Solid Oxide Fuel Cells

Katherine Develos- Bagarinao, Haruo Kishimoto, Tomohiro Ishiyama, Teruhisa Horita, Harumi Yokokawa, Katsuhiko Yamaji

1384Grain Boundary Engineering in Solid-State Ionic Conductors

Conrad R. Stoldt, Ilya Lisenker

1385Effect of Co/Fe Ratio and Microstructural Design on the Structural and Electrical Properties of Mixed Conducting $BaSrCo_{1-X}Fe_xO_{3-X}$

Kuan-Zong Fung, Shu-Yi Tsai, Chung-Ta Ni, Shang-Yi Lo, Ta-Te Chen

1386Time Resolved DXAS Study on Micro and Nano $NiO/Ce_{0.9}Gd_{0.1}O_{1.95}$ Cermets for Intermediate Temperature Solid Oxide Fuel Cells

Afra Fernandez Zuvich, Susana Larrondo, Martín Saleta, Federico Napolitano, Alberto Caneiro, Horacio Troiani, Diego German Lamas, Mauricio Damián Arce, Adriana Serquis, Analía Soldati

1387Effect of Cobalt-Doped Electrolyte on the Electrochemical Performance of Lscfo/Cgo Interfaces

Laura Cecilia Baqué, Karinjilottu Padmasree, Mónica Aimee Ceniceros Reyes, Horacio Troiani, Mauricio Damián Arce, Adriana Serquis, Analía Soldati

1388The Cathodic Behavior of Doped Pr_2NiO_4 Cathode for Solid Oxide Fuel Cell with Lsgm As Electrolyte

Jing Xie, Shuai Ban, Hongjun Zhou, Tatsumi Ishihara

1389Effect of Thermal Treatment on Structural/Electrical Properties of Protective Oxides for SOFC Metallic Interconnects

Shu-Yi Tsai, Kuan-Zong Fung, Chung-Ta Ni

1390Internal Partial Pressure and Durability of Bcy Based Protonic Ceramic Fuel Cells As a Function of Electrolyte Thickness

Hyung-Tae Lim

1391Fabrication of Tubular Ceramics Consisting of a Solid Electrolyte and Various Thin Film Ceramic Membranes By Rotational Additive Manufacturing (RAM)

Benjamin Emley, Yan Yao

1392Layered Perovskite Electrodes with High Performance and Durability for Solid Oxide Electrolysis

Areum Jun, Guntae Kim

1393First-Principles Investigation of the Surface Reactivity and Electronic Property of Dopant-Promoted $SrTiO_3$ Catalysts for SOFC Anode Application

Hyung Chul Ham, Hee Su Kim, Sung-Pil Yoon, Jonghee Han, Suk Woo Nam

1394Conductivity of La0.9M0.1NbO4(M=Sm, Gd, Yb) As High Temperature Proton Conductors

Yong Cao, Nan-Qi Duan, Chuanyan Xiong

1395Performance Evaluation of Solid Oxide Carbon Fuel Cells Operating on Steam Gasified Carbon Fuels

Tak-Hyoung Lim, Jong-Won Lee, Seung-Bok Lee, Seok-Joo Park, Rak-Hyun Song

1396(Invited) Potential Energy Landscape for Oxygen Vacancy Dynamics in Doped Ceria

Sangtae Kim

1397High Temperature Electrical Properties of Barium Zirconate-Cerate Type Proton-Conducting Ceramics

Hiroyuki Shimada, Toshiaki Yamaguchi, Hirofumi Sumi, Yoshinobu Fujishiro

1398Solid Oxide Membrane for Reduction of $Ce_{0.8}Gd_{0.2}O_2$ and TiO_2 in LiCl-Li_2o

Luke Christopher Olson, Brenda Lee Garcia-Diaz, Kyle S Brinkman

1399Microstructure and compositional defects affects proton conductivity and reactions in Y-doped $BaZrO_3$ thin films

Nan Yang, Elisabetta Di Bartolomeo, Silvia Licoccia, Vittorio Foglietti, Tien-Lin Lee, Christoph Schlueter, Giuseppe Balestrino, Carmela Aruta, Alex Belianinov, Antonello Tebano, Sergei V. Kalinin, Claudia Cantoni

1400 Development of the Oxide Ion Conductor $Na_{0.5}Bi_{0.5}TiO_3$ (NBT) for Solid Oxide Cells

Christopher Tumilson, Chris Hardacre, Johan Jacquemin, Rachael H Elder, Derek C Sinclair

1401 Investigation of Heterogeneous Catalysts By Electrochemical Method: Ceria and Titania Supported Iridium for Ethylene Oxidation

Yasmine Hajar, Holly Andrea Eva Dole, Martin Couillard, Elena A. Baranova

1402 Electrochemical Frequency Modulation for Estimating Exchange Current Density in Solid Oxide Fuel Cells

Debanjan Das, Derek M. Hall, Serguei N. Lvov

1403 High Performance Anode Material for Solid Oxide Fuel Cells: Ni Exsolution on a-Site Deficient $La_{0.4}Sr_{0.4}Sc_{0.9}Ni_{0.1}O_3$

Yang Gao

1404 Use of Patterned Metal Anodes for Studying Hydrogen Electrochemical Oxidation Reaction in Proton-Conducting SOFCs

Shichen Sun, Osama Awadallah, Zhe Cheng

1405 Poisoning of Proton Conducting SOFC By Hydrogen Sulfide and Carbon Dioxide Fuel Contaminants

Shichen Sun, Zhe Cheng

1406 Addition of Protonic Conductors to Enhance SOFC Anode Performance

John Irvine, Cairong Jiang, Jianjun Ma, Paul Connor, Mark Cassidy

1407Sensitivity Studies of Fuel Characteristics and State of Health Investigation of a Planar SOFC Short Stack Operating on Alternative Fuel By Electrochemical Impedance Spectroscopy

Debanjan Das, Serguei N. Lvov

1408(Invited) High Performance Nano-Ceria Electrodes for Solid Oxide Cells

Christopher Graves, Bhaskar Reddy Sudireddy

1409Developing Low-Intermediate Temperature Fuel Cells for Direct Conversion of Methane to Methanol Fuel

Alireza Torabi, Joseph Barton, Carl Willman, Hossein Ghezel-Ayagh, Na Li, Abhinav Poozhikunnath, Radenka Maric, Olga A Marina

1410Subtraction Impedance Spectra in Solid Oxide Fuel Cells Operating on Alternative Fuel Reformate Streams Poisoned By Inorganic Impurities

Debanjan Das, Serguei N. Lvov

1411Carbon and Redox Tolerant Infiltrated Oxide Fuel-Electrodes for Solid Oxide Cells

Theis Løye Skafte, Bhaskar Reddy Sudireddy, Peter Blennow, Christopher Graves

1412La-Doped $BaSnO_3$ As Anode Material for Low Temperature-Solid Oxide Fuel Cells

Mohammed Hussain Abdul Jabbar, Ian Robinson, Ke-Ji Pan, Eric D Wachsman

I03-Hydrogen and Oxygen Evolution Catalysis for Water Electrolysis 2

Energy Technology/Industrial Electrochemistry and Electrochemical Engineering/Physical and Analytical Electrochemistry

1413(Invited) Materials Challenges in Advanced Water Splitting Technologies

Eric Lars Miller, Katie Randolph, David Peterson, Erika Sutherland, Neha Rustagi, Sarah Studer, Benjamin Klahr

1414(Invited) Fundamental Aspects of Electrocatalysis at Work in Water Electrolysis

Shimshon Gottesfeld

1415(Invited) Oxygen Evolution Catalysts for Water Electrolysis: Challenges and Progress with Extended Surface Ir-Based Catalysts

Shaun M Alia, Katherine Hurst, K.C. Neyerlin, Shyam S Kocha, Chilan Ngo, Sarah Shulda, Svitlana Pylypenko, Bryan S Pivovar

1416Nanosized Oer Catalysts with Superior Activity for Anodes of PEM Electrolysis Produced By a Cost-Effective Procedure

Aldo Saul Gago, Philipp Lettenmeier, Li Wang, K. Andreas Friedrich

1417Durable Membrane Electrode Assemblies (MEA) for Proton Exchange Membrane (PEM) Electrolyzer Systems Operating at High Current Densities

Philipp Lettenmeier, Rainey Wang, Rami Abouatallah, Aldo Saul Gago, K. Andreas Friedrich

1418Influence of Ionomer Content in IrO_2/TiO_2 Electrodes on PEM Water Electrolyser Performance

Maximilian Bernt, Hubert A. Gasteiger

1419Investigation and Mitigation of Degradation in Polymer Electrolyte Fuel Cell Due to Cell Reversal Using Oxygen Evolution Catalyst

Pratiti Mandal, Shawn Litster

1420The Impact of Dynamic Anode Hydrogen Starvation on Proton Exchange Membrane Fuel Cell Performance

Paul Taichiang Yu, Jingxin Zhang, Eric A. Bonn, Swami Kumaraguru, Balsu Lakshmanan

1421(Invited) Ir Oxide-Based Electrocatalysts for the Oxygen Evolution Reaction (OER) in Polymer Electrolyte Membrane Electrolyzers and Acid Photoelectrochemical Cells

Peter Strasser

1422Synthesis and Oxygen Evolution Performances of Iridium Oxide Electrocatalysts Supported on Tin Oxides for Polymer Electrolyte Membrane Water Electrolysis

Hideaki Ohno, Shinji Nohara, Katsuyoshi Kakinuma, Akiko Miyake, Shigehito Deki, Masahiro Watanabe, Hiroyuki Uchida

1423A Pt-Free, Activated Carbon Nanotube Cathode, PEM Water Splitting Electrolyzer

Rajib Kumar Das, Svetlana V. Vasilyeva, Ramon M Pulido, Ilaria Pucher, Mark Turiansky, Andrew G. Rinzler

1424Self-Terminated Electrodeposition of Ultrathin Iridium Film Catalysts

Sang Hyun Ahn, Haiyan Tan, Yihua Liu, Leonid A. Bendersky, Thomas P. Moffat

1425Fine Tuning of the Oxygen Evolution Reaction Activity and Stability of Hydrous Iridium Oxides By Thermal Treatment

Simon Geiger, Olga Kasian, Serhiy Cherevko, Karl J.J. Mayrhofer

1426Split Water Under 0.8 V at Room Temperature

Xiaobo Chen

1427(Invited) Special Sites in Electrocatalysis for Oer and ORR

Jan Rossmeisl

1428In-Operando Observation of Geometrical-Site-Dependent Activity of Spinel Co_3O_4 for Water Oxidation

Hsin-YI Wang, Sung-Fu Hung, Han-Yi Chen, Ting-Shan Chan, Bin Liu

1429Non-Precious Metal Oxygen Evolution Reaction Catalysts for Hydroxide Exchange Membrane Electrolyzers

Yushan Yan, Zhongbin Zhuang

1430Electrolyte Effects in Manganese Oxides in Context of Water Splitting: In Situ SERS and Corrosion Studies

Chinmoy Ranjan, Zoran Miroslav Pavlovic, Qiang Gao, Robert Schloegl

1431New Insights into the Water Oxidation Mechanism from Kinetic Isotope Effect Studies

Edmund C. M. Tse, Thao Thi Huong Hoang, Jason A. Varnell, Andrew A. Gewirth

1432Synthesis and Characterization of Oxygen Evolution Reaction(OER) Catalysts for Anion Exchange Membrane Electrolyzer

Kyu Hwan Lee, Sung Mook Choi, Myeong-Je Jang

1433(Invited) An Atomically Precise Oxygen Evolution Catalyst

Douglas R. Kauffman

1434Metal Oxides Supported on Carbon Nanotubes As Bifunctional Electrocatalysts for Reversible Alkaline Membrane Fuel Cells

Shuai Zhao, Brian Rasimick, William E Mustain, Hui Xu

1435Design of Electrocatalysts for Oxygen Evolution Reaction

Alexey Serov, Ashley M Maes, Sarah Blair, Kateryna Artyushkova, Plamen Atanassov

1436Perovskite-Based Oxide Catalysts to Improve the Oxygen Evolution and Reduction Activity

Nam-In Kim, Inseop So, Jun-Young Park

1437Tailoring the Performance of Oxides for the Oxygen Evolution Reaction

Vladimir Tripkovic, Heine Anton Hansen, Juan Maria Garcia Lastra, Tejs Vegge

1438Transition Metal Chalcogenide Based Elelctrocatalysts for Facile Water Oxidation/Reduction

Abdurazag Swesi, Jahangir Masud, Manashi Nath

1439(Invited) Bifunctional Oxide Nanocomposite Catalysts for Reversible Electrochemical Energy Technologies

Gang Wu

1440Activity and Stability of Pure and Modified Coooh for the Oxygen Evolution Reaction in an Alkaline Medium

Zhu Chen, Coleman X. Kronawitter, Bruce E. Koel

1441Ultramicroelectrode Studies of Self-Terminated Electrodeposited Ultrathin Ni Electrocatalysts

Nicole L. Ritzert, Thomas P. Moffat

1442Cobalt-Molybdenum Carbide Hybrids As Efficient Oxygen Evolution Reaction Catalysts for Alkaline Water Electrolysis

MinJoong Kim, DongHoon Song, SeKwon Oh, EunAe Cho

1443Structure-Activity Relationships in Ni-Fe Oxyhydroxide Oxygen Evolution Electrocatalysts

Adam S. Batchellor, Michaela S. Burke, Lisa J. Enman, Shannon Wachter Boettcher

1444First Principles Studies of Electrocatalysis: From Methodology Development to Computational Design of Bi-Functional Catalysts with Improved Performance

Zhenhua Zeng, Jeff Greeley

1445Hydrogen Production Using Different Graphene/Au@TiO_2 Composites Under Visible and Ultraviolet Light

Abniel Machín, Francisco Márquez

1446Photocatalytic Hydrogen Production Via Water Splitting Using Different Gold-Based Catalysts

Juan C. Arango, Abniel Machín, Francisco Márquez

1447Electrodeposition of Binary and Ternary Ag-Tl-Se Thin Films and Its Possible Application in Photoelectrochemical Conversion of the Solar Energy

Francisco Willian de Souza Lucas, Lucia Helena Mascaro

1448Lateral Size Effect on Oxygen Evolution Reaction Activity of IrO_2 Nanosheet

Daisuke Takimoto, Yusuke Ayato, Dai Mochizuki, Wataru Sugimoto

1449Tungsten Carbide-Based Catalysts for Oxygen Evolution Reaction in Alkaline Media

DongHoon Song, MinJoong Kim, EunAe Cho

1450Effect of RTILs on the Hydrogen Evolution Reaction in Alkaline Media

Luís Amaral, Biljana Sljukic, Diogo M.F. Santos, Cesar A.C. Sequeira

1451Electrochemical Synthesis of Hydrogen with Depolarization of the Anodic Process

Leonid Skatkov, Gennadiy Tulskiy, Alena Tulskaya, Vladimir Bayrachniy, Valeriy Gomozov, Svetlana Deribo

1452(Invited) Electrochemistry on 4d and 5d Transition Metal-Oxide Films Epitaxially Grown on Single Crystal Substrates: Implications for Electrocatalysis

Ding-Yuan Kuo, Chuhyon Eom, Hanjong Paik, Jason Kawasaki, Geoffroy Hautier, Kyle Shen, Darrell G. Schlom, Jin Suntivich

1453Mixed Metal Oxides As Electrocatalysts for the Oxygen Evolution Reaction

Mary Lou Lindstrom, Ruchi Gakhar, Dev Chidambaram

1454Nanostructured Nickel Iron Sulfide Grown on Nickel Foam for Highly Active and Durable Water Splitting Electrocatalyst in Alkaline Electrolyte

Sangaraju Shanmugam, Pandian Ganesan

1455(Invited) Elucidating Hydrogen Oxidation/Evolution Kinetics in Base and Acid By Enhanced Activities at the Optimized Pt-Shell Thickness on the Ru Core

Zhong Ma, Katherine Elbert, Jue Hu, Yu Zhang, Guangyu Chen, Wei An, Ping Liu, Hugh Isaacs, Radoslav R Adzic, Jia X. Wang

1456High Performance and Durable Cobalt Based Nanostructured Alloy As an Electro-Catalyst for Hydrogen Evolution Reaction in Water Electrolysis

Prasad Prakash Patel, Prashanth Jampani, Moni Kanchan Datta, Oleg I Velikokhatnyi, Prashant N Kumta

1457Increased Electrocatalytic Activity of Colloidal Nanoparticles through Anionic Substitution and Chemical-Free Binding

Andrew Nelson, Kevin Fritz, Matthew Fayette, Shreyas Honrao, Richard Hennig, Jin Suntivich, Richard Robinson

1458Self-Supported Three-Dimensional Macroporous Nickel Phosphide Electrodes for Overall Electrochemical Water Splitting

Lifeng Liu, Xiaoguang Wang, Wei Li, Dehua Xiong

1459Abrupt Mechanistic Variation of Hydrogen Evolution Reaction on Metal Electrode Surfaces in the Potential-pH Space

Shima Haghighat, Jahan Dawlaty

1460N-Doped Reduced Graphene Oxide Composites for Hydrogen Generation in Presence of Chloride Ion Impurities in Alkaline Medium

Aditi Halder, Arpit Bharadwaj, Himmat Singh Kushwahab, Mohammad Saquib

1461Cobalt Molybdenum Phosphide As a Non-Noble-Metal Catalyst for the Hydrogen Evolution Reaction

Wei-Fu Chen, Si-Lin Fang, Kuei-Hsien Chen, Li-Chyong Chen

1462Catalysts, Nickel Phosphide (Cathodic) and $LiCoO_2$ (Anodic), for Electrolysis of Water

Shinjae Hwang, Spencer H Porter, Anders B. Laursen, Graeme Gardner, Mengjun Li, Viacheslav Manichev, Voshadhi Amarasinghe, Elaheh Taghaddos, Ahmad Safari, Martha Greenblatt, Eric Garfunkel, Gerard Charles Dismukes

1463Understanding the Enhanced Activity of Pt-Alloys Toward Hydrogen Oxidation Reaction in Alkaline Media

Qingying Jia, Nagappan Ramaswamy, Michael Bates, Shraboni Ghoshal, Jingkun Li, Sanjeev Mukerjee

1464Promotion Effect of Electrodeposition Parameters on the Performances of MnO_2 Thin Films Used As Photoelectrocatalysts for Water Oxidation

Wenchao Yu, Cyrille Bazin, Françoise Pillier, Alain Pailleret

1465Hematite Nanostructures for High Efficient Solar Water Splitting

Xuhui Sun, Jiujun Deng, Jun Zhong

1466Three-Dimensional CuO Branched Nanowires for Efficient Photoelectrochemical Water Splitting

Kwan Woo Lim, Jong-Lam Lee

I04-Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 2

High Temperature Materials/Battery/Energy Technology

1467(Invited) Mechanical and Electrochemical Response of All-Solid-State Lithium-Ion Batteries

Giovanna Bucci, Yet-Ming Chiang, W. Craig Carter

1468(Invited) Chemical-Mechanical Interactions in Ion-Conductive Polymers

Ahmet Kusoglu, Adam Z Weber

1469(Invited) Understanding and Controlling Chemo-Mechanical Coupling in Perovskite Oxides

Nicola H. Perry, Dario Marrocchelli, Sean R. Bishop, Harry L. Tuller

1470(Invited) Thermodynamics, Stress, and Stefan-Maxwell Diffusion in Solids: Application to Small-Strain Materials Used in Commercial Lithium-Ion Batteries

Daniel R Baker, Mark W Verbrugge, Allan F Bower

1471(Invited) Non-Classical Electrostriction in Materials with a Large Concentration of Point Defects

Igor Lubomirsky

1472(Invited) Enhanced Electrochemical and Catalytic Properties at Strained Exsolution Particles

John Irvine, Dragos Neagu

1473Dynamic Chemical Expansion of Thin Film Non-Stoichiometric Oxides at Extreme Temperatures

Jessica G. Swallow, Jae Jin Kim, John M. Maloney, Di Chen, James F. Smith, Sean R. Bishop, Harry L. Tuller, Krystyn J. Van Vliet

1474Nanoscale Mechanical Changes of 2D Titanium Carbide (MXene) Pseudocapacitive Electrodes upon Cation Intercalation

Jeremy Come, Yu Xie, Michael Naguib, Sergei V. Kalinin, Yury Gogotsi, Paul R. Kent, Nina Balke

1475(Invited) Computational Design of Coatings, Interfaces, and Nano-Structures for Si Based Electrodes

Yue Qi, Sung-Yup Kim, Kwang Jin Kim

1476Precipitation Induced Stress and Degradation in the Lithium-Sulfur Battery Cathode

Aashutosh Mistry, Pallab Barai, Partha P. Mukherjee

1477Elastic Properties of Freeze-Cast $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_3$

Ying Zou, Wakako Araki, Maria Balaguer, Jürgen Malzbender

1478Cr Poisoning of (La,Sr)(Co,Fe)O_3 SOFC Cathodes at the Micrometre to Nanometre Scale

Na Ni, Stephen J. Skinner, San Ping Jiang, Cheng Cheng Wang

1479Determination of Mass and Charge Transport of $La_2Ni_{0.95}Al_{0.05}O_{4.025+d}$at Isothermal Condition

Ha-Ni Im, Sang-Yun Jeon, Young-Sung Yoo, Sun-Ju Song

1480Study on Solid Oxide Fuel Cell with Porous Scaffold Electrode Manufactured By Tape Casting Process

Joongmyeon Bae, Young-hoon Jang

1481(Invited) LLZO Ceramic Electrolytes: A Path Forward to Solid-State Batteries?

Marca Doeff, Lei Cheng

1482(Invited) Mechanical Stabilty of Solid Electrolyte Interfaces in Solid-State Batteries

Jeff Sakamoto

1483Simultaneously Coupled Mechanical-Electrochemical-Thermal Simulation of Lithium-Ion Cells

Shriram Santhanagopalan, Chao Zhang, Michael A. Sprague, Ahmad Pesaran

1484(Invited) Modeling the Chemically Induced Stress in Lscf Oxygen-Separation Membranes

Bryan Euser, Huayang Zhu, John Berger, Robert J. Kee

1485A Multiphysics Study of Chemical Potential Distributions As Drivers for Solid Oxide Cell Mechanical Degradation

George J. Nelson, Zachary van Zandt

1486Mechano-Chemical Coupling in Double Perovskites As Energy Related Materials

Andrey Yu. Zuev, Dmitry S. Tsvetkov, Ivan L. Ivanov, Vladimir V. Sereda, Dmitry Malyshkin

1487Hydrostatic Stress - Temperature Diagrams for Electronic Charge Carriers in $SrTiO_3$

Mostafa Youssef, Krystyn J. Van Vliet, Bilge Yildiz

1488Ferroelasticity of $LaMO_3$ (M=Co, Fe, Al, Ga)

Wakako Araki, Kazutaka Takeda, Yoshio Arai

1489(Invited) Ab Initio Studies of Strain Effects on Perovskite Oxygen Vacancy Formation and Migration Energetics

Dane Morgan, Tam Mayeshiba

1490(Invited) Growth & Redox Capacity of Coherently Strained Ceria Ultrathin Films

William C Chueh

1491 Stress/Strain Effect on Non-Stoichiometry of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\hat{i}'}$

Miaolong Qiu, Yoshio Arai, Wakako Araki

1492 Strained-Induced Oxygen Non-Stoichiometry on $La_{0.5}Sr_{0.5}Mn_{0.5}Co_{0.5}O_{3-\hat{i}\square}$ Thin Films

Celeste Anna Maria van den Bosch, Nebil Katcho, Claudio Cazorla, Jose Santiso, Javier Carrasco, Ainara Aguadero

1493 Lithium Chemical Potential Change in Lithium Ion Battery Cathodes Under Mechanical Strain

Koji Amezawa, Keita Funayama, Yuta Kimura, Fakkao Mahunnop, Takashi Nakamura, Naoaki Kuwata, Junichi Kawamura, Tatsuya Kawada

1494 (Invited) Revealing the Optimum Li-Mobility in Garnet Electrolytes

Rowena Brugge, Richard John Chater, William Wang Manalastas, John A. Kilner, Ainara Aguadero

1495 Thermo-Chemo-Mechanical Response of Solid Oxide Cells during Reduction and Cooling

Christodoulos Chatzichristodoulou, Benoit Charlas, Kawai Kwok, Peter Stanley Jørgensen, Poul Norby, Peter Vang Hendriksen, Henrik Lund Frandsen

1496 Effect of Fast Mass Diffusion Regime on Defective Ceria Mechano-Chemo-Electrical Properties

Vincenzo Esposito

1497 Microstructural Degradation in Rechargeable Batteries

R. Edwin García

1498Exploring the Critical Role of Binders for Silicon Electrodes in Lithium-Ion Batteries

Jiagang Xu, Yikai Wang, Yang-Tse Cheng

1499Identifying the Link Between Li-Ion Particle Fracture and Impedance Growth

Frank P McGrogan, Sean R. Bishop, Yet-Ming Chiang, Krystyn J. Van Vliet

1500Impact of Evolving Electrode Morphology on Fuel Cell Performance: From the Nano to Mesoscale

David A. Cullen, Brian Sneed, Karren L. More

I05-Heterogeneous Functional Materials for Energy Conversion and Storage

High Temperature Materials/Energy Technology/Physical and Analytical Electrochemistry

1501(Invited) Multi-Modality X-Ray Imaging at a 10 Nanometer Resolution

Yong S Chu, Hanfei Yan, Xiaojing Huang, Sebastian Kalbfleisch, Mingyuan Ge, Kenneth Lauer, Evgeny Nazaretski

1502(Invited) In Situ TEM Study of Reduction and Reoxidation of NiO and NiO-YSZ Composites

Jan Van herle, Quentin Jeangros, Jakob Birkedal Wagner, Thomas Willum Hansen, Aïcha Hessler-Wyser, Cécile Hébert, Rafal Dunin-Borkowski

1503Correlating Laboratory-Based X-Ray and Electron Microscopy to Characterize Defects and Structural Evolution in Solid Oxide Fuel Cells

William Harris, Jeff Gelb, Steve Kelly, Lorenz Lechner, Sreenivas Bhattiprolu, Hrishikesh Bale, Kazunari Sasaki

1504(Invited) Three Dimensional Microstructure Measurements of SOFCs: Electrode Microstructural Evolution and Long-Term Durability

Scott A Barnett, David Kennouche, Hongqian Wang

1505(Invited) Numerical Simulation of Sintering Process in Solid Oxide Fuel Cell Anode

Naoki Shikazono, Shotaro Hara

1506Representative Volumes in Highly Heterogeneous Fuel Cell Materials

William K Epting, Tim Hsu, Kirk Gerdes, Paul R Ohodnicki, Harry Abernathy, Shawn Litster, Paul A Salvador

1507Three-Dimensional Analysis of Coarsening Dynamics in Porous Materials for Electrochemical Energy Conversion and Storage: Direct Measurement and Visualization of Changes in Local Surface Curvature

Alex P. Cocco, Arata Nakajo, Anil V. Virkar, Wilson K. S. Chiu

1508(Invited) The Stability of Solid Oxide Fuel Cells: Insights through in Situ X-Ray Tomography

David Kennouche, Yu-chen Karen Chen-Wiegart, Kyle J Yakal-Kremski, Jun Wang, John Gibbs, Scott A Barnett, Peter W Voorhees

1509Water Distribution Oscillations in a PEMFC Under Low Cathode Humidification: Neutron Imaging and Transient Two-Phase Modeling

Daniel G Sanchez, Pierre Boillat, Johannes Biesdorf, Antoni Forner-Cuenca, Magali Cochet, Pablo A. García-Salaberri, Marcos Vera, K. Andreas Friedrich

1510In Situ Characterization of Novel Gas Diffusion Layers for Advanced Water Management in Fuel Cell

Antoni Forner-Cuenca, Victoria Manzi-Orezzoli, Johannes Biesdorf, Lorenz Gubler, Thomas J. Schmidt, Pierre Boillat

1511Novel Diffusion Layers with Patterned Wettability: Measurement of Capillary Pressure Characteristic with Neutron and Synchrotron Imaging

Antoni Forner-Cuenca, Victoria Manzi-Orezzoli, Johannes Biesdorf, Adrien Lamibrac, Felix N Büchi, Lorenz Gubler, Thomas J. Schmidt, Pierre Boillat

1512(Invited) Heterogonous Mixed Ion and Electron Conducting Membranes for Efficient Electrochemical CO_2 Capture and Conversion

Kevin Huang

1513(Invited) The Role of Ionic Transport in Nuclear Waste Immobilization and Membrane Separations

Kyle S Brinkman

1514(Invited) Graded Oxygen Transport Membranes for Energy Efficient Separation Applications

Wilhelm A. Meulenberg

1515(Invited) Single Step Direct Electrocatalytic Reduction of CO_2 towards CO and Hydrocarbons

Guenter Schmid, Christian Reller, Ralf Karl Krause, Bernhard Schmid, Sebastian Stefan Neubauer, Maximilian Fleischer

1516(Invited) 3D Pore-Scale Transport Model Incorporating Realistic Cathode Morphology and Intermediate Reactions in Lithium-Air Batteries

Charles Andersen, Han Hu, Ying Sun

1517Transport-Geometry Interactions in Li-Ion Cathode Materials Imaged Using X-Ray Nanotomograph

George J. Nelson, Logan Ausderau, Joseph Buckley, Aashutosh Mistry, Partha P. Mukherjee, Vincent De Andrade

1518Quantitative Nanostructure Analysis of Silver Vanadium Phosphorus Oxide ($Ag_2VO_2PO_4$) Battery Material Using X-Ray and Electron Microscopy

Mingyuan Ge, Hanfei Yan, Xiaojing Huang, Huolin L. Xin, Wenjun Liu, Vincent De Andrade, Amy C Marschilok, Esther S Takeuchi, Yong S Chu

1519Mathematical Modeling of Direct Ethanol Fuel Cells Using a Multi-Step Chemical Kinetic Mechanism

Juan Sanchez-Monreal, Pablo A. García-Salaberri, Marcos Vera

15203-D Inkjet Printed Electrode Microstructures for Solid Oxide Electrolysers and Fuel Cells

Lisa Kleiminger, Nick Farandos, Geoff H. Kelsall

1521(Invited) In Operando Studies of Chlorine Induced Anode Degradation in SOFCs Operating with Methane and Biogas

Robert A Walker, Kyle W. Reeping, Jessica Bohn, Jeffrey C Owrutsky, Syed Noorullah Qadri, John D. Kirtley, Daniel A Steinhurst

1522(Invited) In Operando Optical Studies of Solid Oxide Electrochemical Cells

Jeffrey C Owrutsky, John D. Kirtley, Syed Noorullah Qadri, Daniel A Steinhurst, Bryan W. Eichhorn, Robert A Walker

1523Hydrogen Oxidation Mechanisms on Perovskite Solid Oxide Fuel Cell Anodes

Tenglong Zhu, Daniel Fowler, Scott A Barnett

1524Life Tests of Current Switched Oxygen Electrodes for Reversible Solid Oxide Cells

Justin Railsback, Gareth Hughes, Matthew Lu, Scott A Barnett

1525(Invited) Ce(Mn,Fe)O_2/La(Sr)Fe(Mn)O_3 Nano Size Film As a Dense Anode for Low Temperature Solid Oxide Fuel Cells

Tatsumi Ishihara, Masaru Yoshikai, Young Wan Ju, Shintaro Ida

1526Double Perovskite Ba_2FeMoO_{6-D} As Fuel Electrode for Protonic-Ceramic Membranes

Hanping Ding, Sandrine Ricote, Neal P Sullivan

1527Protonic Ceramic Fuel Cell Stacks

Hanping Ding, Chuancheng Duan, Jianhua Tong, Long Le, Sandrine Ricote, Ryan O'Hayre, Neal P Sullivan

1528Characterization and Performance of Proton Conducting Solid Oxide Fuel Cells Manufactured Using Reactive Spray Deposition Technology

Timothy D. Myles, Ryan Ouimet, Dongwook Kwak, Radenka Maric

1529Infiltrated CsH_2PO_4-Carbon Nanotube Composites for High Performance Solid Acid Fuel Cathodes with Low Pt Loading

Alexander B. Papandrew, Ramez A. Elgammal, Mengkun Tian, Ondrej Dyck, Wesley Daniel Tennyson, Beth L Armstrong, Gerd Duscher, Gabriel M Veith, Thomas A. Zawodzinski

1530Mechanisms of Performance Degradation of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_3$ Solid Oxide Fuel Cell Cathodes

Hongqian Wang, Kyle J Yakal-Kremski, Ted Yeh, Ghislain M Rupp, Andreas Limbeck, Jürgen Fleig, Scott A Barnett

1531The Effect of Precusor Gel Desiccation, Ceria Oxide Pre-Infiltration, and Precursor Solution Additives on Infiltrated Lanthanum Strontium Ferrite-Lanthanum Strontium Cobaltite Solid Solution Nano-Particles

Theodore E. Burye, Hongjie Tang, Jason D. Nicholas

1532(Invited) Fracture Mechanics of Ionic Conductors By Internal Precipitation

Anil V. Virkar

1533(Invited) Enhancing Cathode ORR Kinetics and Durability through Low-Cost Surface Modification

Yu Chen, Dong Ding, Tao Wei, Dongchang Chen, Lei Zhang, Ben Harris Rainwater, Meilin Liu

1534(Invited) Enhanced Electrochemical Activites in Perovskite Oxides through Strain Control of the Oxygen Stoichiometry

Ho Nyung Lee

1535Rational Design of Stable Cathode Materials for Solid Oxide Fuel Cells

Deniz Cetin, Sophie Poizeau, Srikanth Gopalan

1536(Invited) Electrospun Particle/Polymer Fiber Mats As Fuel Cell and Battery Electrodes

Peter N. Pintauro

1537Evaluation of a Second-Generation Bulky Cation for Anion Exchange Membranes

Ye Liu, Bingzi Zhang, Yushan Yan, Matthew W Liberatore, Andrew M Herring

1538Understanding Morphology and Ion Transport in Novel Poly (cyclooctene) Based Membranes Under Humidified Conditions

Himanshu Sarode, WenXu Zhang, Yuan Yang, E. Bryan Coughlin, Andrew M Herring

1539Effective Nickel and Ruthenium Modified Palladium Anode Catalysts for Ethylene Glycol Oxidation in Alkaline Medium

Rodrigo Garcia Da Silva, Adalgisa Rodrigues De Andrade, Karine Servat, Claudia Morais, Teko W. Napporn, Kouakou Boniface Kokoh

1540(Invited) The Use of Broadband Electric Spectroscopy to Probe the Relaxations and Polarizations in Phase Seperated Polymer Electrolytes

Andrew M Herring, Vito Di Noto, Keti Vezzù, Himanshu Sarode

1541(Invited) Development of Alkaline- and Bipolar-Membranes for Hybrid Fuel Cell Applications

Kyle N. Grew, Joshua P. McClure, Deryn Chu

1542Nickel-Rare Earth (RE=Ce,Dy,Sm) Electrodes for H_2O_2 Reduction in Direct Borohydride Fuel Cells

Diogo M.F. Santos, David Cardoso, Biljana Sljukic, Cesar A.C. Sequeira, Daniele Macciò, Adriana Saccone

1543Characterization of Ultra-Low Pt Loading Meas Prepared By Electrospray

Beatriz Martinez-Vazquez, Daniel G Sanchez, Santiago Martin, Jose Luis Castillo, Pedro Luis Garcia-Ybarra, K. Andreas Friedrich

1544(Invited) The Influence of the Carbon Support and Platinum Particles Size on Degradation of Cathode for Low Platinum Loading Catalyst Layer

Radenka Maric, Haoran Yu, Andrea Baricci, Andrea Casalegno, Laure Guetaz

1545Fuel Cell Performance of (Cyanamide + Polyaniline)-Iron-Carbon Cathode Catalyst

Hoon T Chung, Xi Yin, Geraldine M Purdy, Ulises Martinez, David A. Cullen, Rangachary Mukundan, Karren L. More, Piotr Zelenay

1546Green Synthesis of Au-Based Nanomaterials Using an "All-in-One" Ionic Liquid and Their Electrocatalytic Properties for Glucose Electro-Oxidation

Luis A. Pérez Covarrubias, Christian A. Romero-Soto, Lorena Álvarez-Contreras, Minerva Guerra-Balcázar, Luis Gerardo Arriaga, Janet Ledesma-García, Noé Arjona

1547An Effective Way of Suppressing Main Degradation Mechanisms of Carbon Supported High Surface Area Catalysts at Elevated Temperatures

George Polymeros, Claudio Baldizzone, Simon Geiger, Jan-Philip Grote, Johannes

Knossalla, Stefano Mezzavilla, Serhiy Cherevko, Aleksandar R. Zeradjanin, Ferdi Schüth, Karl J.J. Mayrhofer

1548Activity and Microstructure of Ultra-Low Iridium Loading Catalyst for PEM Electrolyzer MEA

Haoran Yu, Nemanja Danilovic, Yang Wang, Chris Capuano, Alessandro Palmieri, William E Mustain, Katherine E Ayers, Radenka Maric

1549Electrocatalytic Activity of Au Core Au-Pt Alloy Shell Nanoparticles Prepared on Ionic Liquid Surface Via Metal Sputtering Deposition

Daisuke Sugioka, Tatsuya Kameyama, Susumu Kuwabata, Tsukasa Torimoto

1550Colloidal Syntheis of Ptzn Nanocrystals and Their Activity for Oxygen Reduction Reaction

Youngjin Ye, Jinwoo Lee

1551Function-Led Design of Electrocatalysts Based on Alloyed Metallic Aerogels for Fuel Cells

Bin Cai, Wei Liu, Dan Wen, Alexander Eychmüller

1552Spectroelectrochemical Insights into the Formation of Robust Interfaces for the Immobilization of Biological and Molecular Electrocatalysts

Tomos Gwilym Ab Alun Harris, Nina Heidary, Anja Sokolowski, Christoph Tzschucke, Peter Hildebrandt, Ingo Zebger, Anna Fischer

1553Low Potential Asymmetrical Functionalization of Conductive Micro- and Nanowires By Closed Bipolar Electrochemistry

Paolo Ugo, Michael Ongaro, Arianna Gambirasi

1554Synthesis of TiO_2 Nanotubes By Ti Foil Electrochemical Dissolution

Paata Nikoleishvili, Rusudan Kurtanidze, Giorgi Gorelishvili, Valentina Kveselava, Davit Sharabidze, Davit Gogoli

1555Hydrogen Generation from the Hydrolysis of Sodium Hypophosphite Using CoB_2O_4 Catalyst

Paata Nikoleishvili, Giorgi Gorelishvili, Valentina Kveselava, Rusudan Kurtanidze, Davit Gogoli, Davit Sharabidze

1556Ternary Transition Metal Oxide Nanoparticles with Spinel Structure As Oxygen Reduction Reaction Electrocatalysts

Rou Jun Toh, Alex Yong Sheng Eng, Zdenek Sofer, David Sedmidubsky, Martin Pumera

1557Development of Nanostructured Metal Oxides-Platinum Electrodes for Enhanced Electrocatalytic Oxidation of Ethanol

Youling WANG, Amel-Tabet Aoul, Mohamed Mohamedi

1558Electrochemical Performance of H_2o-CO_2 Co-Electrolysis with a Tubular Solid-Oxide Co-Electrolysis (SOC) Cell

Tak-Hyoung Lim, Jong-Won Lee, Seung-Bok Lee, Seok-Joo Park, Rak-Hyun Song

1559High-Temperature Transport and Thermoelectric Properties of $Ca_{3-X}Sm_xCo_4O_9$

Kyeongsoon Park, J. S. Cha, D. A. Hakeem

1560Fabrication and Electrochemical Properties of Highly Ordered Titania Nanotubes Modified with Boron Nanocrystalline Diamond

Robert Bogdanowicz, Katarzyna Siuzdak, Michal Sobaszek, Mariusz Szkoda

1561Experimental Performance Characterization of Polymer Electrolyte Fuel Cells with Varying Channel Dimensions

Nathanial Cooper, Travis Smith, Anthony Santamaria, Jae Wan Park

1562Interface Engineering in Hybrid Organic-Inorganic Composites for Flexible and High-Performance Thermoelectrics

Sunmi Shin, Soonshin Kwon, Renkun Chen

1563Electrochemically Formed TiO_2 Nanotube Arrays Site Selectively Decorated with Porous Au Particles By a Controlled Dewetting-Dealloying Approach - a Platform for Efficient Photocatalytic H_2 Evolution

Nhat Truong Nguyen, Marco Altomare, Patrik Schmuki

1564Electrochemical Deposition of PGM Based Fuel Cell Electro Catalysts

Mkhulu K. Mathe, Remegia Mmalewane Modibedi, Lindiwe Eudora Khotseng, Patrick thabo Nonjola, Kenneth I. Ozoemena

1565Higher Efficiency with Lower Platinum Loading: A Systematic Study of Nano Porous Solid Acid Fuel Cell Electrodes

Maximilian Wagner

1566Hydrogen Production By Photocatalytic Water Splitting Using Mixed Oxide Solid Solutions Under UV-Vis Light Irradiation

José J Duconge, Abraham García, María Cotto, Dayna Ortiz, Francisco Márquez

1567Transition Metal Phosphides As CO_2 Reduction Catalysts

Karin U. D. Calvinho, Anders B. Laursen, Timothy A. Goetjen, Avinash B. Garlapati, Gerard Charles Dismukes

1568Vulcan/Pt/Ce(III) Catalysts Prepared By Impregnation Using EDTA for Direct Methanol Fuel Cell, and Direct Ethanol Fuel Cell Applications

Rolando P Guzmán-Blas, Yaileen García-Herrera, Leilani Lotti-Díaz, Krystel Ocasio-Norat

1569Nano-Composite Barium Strontium Cobalt Iron Oxide - Gadolinium Doped Ceria Solid Oxide Fuelcell Cathodes

Brandon J. Bocklund, Jason D. Nicholas

1570Pt-Ni Decorated Metal Oxide Electrodes for Borohydride Fuel Cells

Marta Martins, Biljana Sljukic, Cesar A.C. Sequeira, Gülin S.P. Soylu, Ayse Bayrakceken, Tansel Sener, Diogo M.F. Santos

1571Poisoning Effects of Sulfur on Emergent and Current Heterogeneous Electrocatalysts: Susceptibility of Molybdenum Disulfide and Correlation to Platinum Hydrogen Evolution Kinetics

Shu Min Tan, Zdenek Sofer, Martin Pumera

1572Gold-Cobalt Deposited on Titania Nanotubes as Anode Catalyst for Direct Borohydride Fuel Cells

Diogo M.F. Santos, Aldona Balciunaite, Loreta Tamasauskaite-Tamasiunaite, A. Zabielaitë, A. Jagminienë, Ina Stankeviciene, E. Norkus

1573(Invited) Functional Gradient Carbon-Sulfur Cathode for Rechargeable Li-S Battery

Xingbo Liu, Jianhua Yan, Meng Yao, Bingyun Li

1574(Invited) 2-D Surface Phases for Energy-Related Applications

Jian Luo

1575Nanoscale Interfacial Interaction of Polysulfide with Porous Metal Oxides

Murugesan Vijayakumar, Kandasamy Prabakar, Amila Dissanayake, Priyanka Bhattacharya, Keesung Han, Karl T Mueller

1576(Invited) Plasmonic Metal-Semiconductor Heterojunctions for Photoelectrochemical Energy Conversion

Nianqiang (Nick) Wu, Scott Kevin Cushing, Jiangtian Li, Deryn Chu

1577(Invited) Combined Experimental-Numerical Approaches for Transport Characterization in Nano and Micron-Sized Multi-Component and Multi-Functional Materials

Sophia Haussener

1578(Invited) Integrating Molecules, Surfaces, and Devices to Achieve Emergent Properties in Metal-Organic Frameworks

Mark D. Allendorf, Michael E. Foster, François Léonard, Vitalie Stavila, A. Alec Talin, Roland A. Fischer

1579Charge Transport through Organic Molecular Wires Embedded in Ultrathin Insulating Inorganic Membrane

Eran Edri, Heinz Frei

1580Comparison of TiO_2 and SnO_2 Electron Transport Layers in Planar Perovskite Solar Cells

Melissa McCarthy, Adrian Walsh, Louise Ryan, Jan Kegel, Martyn E Pemble, S O'Brien, Ian M Povey

1581(Invited) High Rate Energy Storage Based on Pseudocapacitance in Oxide Materials

Bruce Dunn

1582Transport Phenomena in Electrical Double Layer Capacitors with Highly Ordered 3D Porous Carbon Electrodes

Bing-Ang Mei, Laurent Pilon

1583Unique Nano-Architecture Electrodes for High-Performance Energy Storage

Gobinda Gopal Khan, Ashutosh K Singh, Debasish Sarkar

1584Enhancement of the Poly(o-methoxyaniline)-Poly(3-thiophene acetic acid) Self-Assembled Electrochemical Capacitor Stability

Wania Aparecida Christinelli, Roger Gonçalves, Ernesto Chaves Pereira

1585(Invited) Interfacial and Transport Phenomena in Hybrid Pseudocapacitors

Laurent Pilon, Henri-Louis Girard, Bing-Ang Mei

1586Electrochemical Charge Storage in Hierarchical Carbon Manifolds

Rajaram Narayanan, Hema Vijwani, Sharmila Mitra Mukhopadhyay, Prabhakar R Bandaru

1587Soft-Templated Mesoporous Graphitic Carbon Nitride and Their Cobalt Composites for Energy Storage Application

Jothi Palani Raja, Kannan Shanthi

K01-12th Manual M. Baizer Memorial Symposium on Organic Electrochemistry

Organic and Biological Electrochemistry

1588(Organic and Biological Electrochemistry Division Manuel M. Baizer Award) Following the Lead of R. B. Woodward and M. M. Baizer: Using Concepts in Physical Organic Chemistry to Shape the Course of Electrochemical Reactions

Kevin D Moeller

1589Electroreductive Coupling Reactions Using a Microflow Reactor

Chiu Marco Lam, R. Daniel Little

1590Stereoselective Nucleophilic Additions to the N-Acyliminium Ions: Elucidation of Stereoselectivity By Spectroscopic Conformational Analysis

Seiji Suga, Junya Yamamoto, Tomoya Akagi, Masahiro Haisa, Koichi Mitsudo

1591Monoalkylation of Methyl Phenylacetate Using in Situ Electrogenaration of 2-Pyrrolidone Anion in an Electrochemical Flow-Microreactor

Yoshimasa Matsumura, Yoshinobu Kakizaki, Hiroyuki Tateno, Mahito Atobe

1592Anodic Oxidation of Nitrotriarylamines and Its Implications for Electrocatalysis

Albert Joseph Fry, Zachary Hillman, Anthony P. Davis

1593Electrochemical Amination of Non-Activated Arenes Using Boron-Doped Diamond Electrodes

Sebastian Herold, Sabine Möhle, Michael Zirbes, Frank Richter, H. Nefzger, Siegfried R. Waldvogel

1594Electrocatalytic Diels-Alder Reactions Assisted By Aromatic Redox Tag

Kazuhiro Chiba, Yusuke Yamaguchi, Atsushi Ozaki, Yohei Okada

1595Investigations of the Electrochemical Behavior of Hydrocarbons in Adiponitrile

Graham T. Cheek

1596Intramolecular Electron Interaction in Various Oligo-nitro-Thiacalix[4]Arenes and Their Electrochemical Reduction

Jiří Ludvík, Alan Li□ka

1597B_{12}-TiO_2 Hybrid Catalyst for Light-Driven Hydrogen Production and Hydrogenation of Carbon-Carbon Multiple Bonds

Hisashi Shimakoshi, Hui Tian, Yoshio Hisaeda

1598Electroreductive Free Radical Coupling from Xanthates Derived from Acetophenones, New Route to 1,4-Dicarbonyl Compounds

Bernardo A. Frontana-Uribe, Ernesto Emmanuel Lopez-Lopez, Luis Demetrio Miranda-Gutierrez

1599Electrocatalytic Reduction of 2,4-Dichlorophenoxyacetic Acid (2,4-D) at Silver Cathodes in Dimethylformamide Containing Tetraalkylammonium Salts

Caitlyn McGuire, Sonali Mali, Dennis G Peters

1600Electrochemical Reduction of CO_2 Using Cyclopentadienone Iron Complexes

Alonso Rosas, Henrik Junge, Matthias Beller, Robert Francke

1601 Electrochemical Generation of Stabilized Halogen Cation Pools

Jun-ichi Yoshida, Shun Horiuchi, Ryutaro Hayashi, Yosuke Ashikari, Akihiro Shimizu

1602 Development of Ionic Liquid-Tagged Carbohydrate Building Block for Electrochemical Glycosylation

Toshiki Nokami, Norihiko Sasaki, Yuta Isoda, Toshiyuki Itoh

1603 Synthesis of 1,5-Diaminonaphthalene Via Electrochemical C,H-Amination of Naphthalene

Sabine Möhle, Sebastian Herold, Frank Richter, Hartmut Nefzger, Siegfried R. Waldvogel

1604 Phenanthroimidazole Mediators - Immobilization on Electrodes and Mechanistic Studies

Bruce Johnson, Louise Berben, R. Daniel Little, Michael Römelt, Robert Francke

1605 Integrating Metabolic Engineering and Electrocatalysis for the Production of Polyamides from Sugar

John Edward Matthiesen, Miguel Suastegui, Jack M Carraher, Zengyi Shao, Jean-Philippe Tessonnier

1606 Cathodic Cross-Coupling Reaction of Aromatic Compounds Though SET Pathway Towards a Novel Biphenyl Synthesis

Yang Qu, Hiroyuki Tateno, Mahito Atobe

1607 Direct Reduction of 1-Bromo-6-Chlorohexane and 1-Chloro-6-Iodohexane at Silver Electrodes in Dimethylformamide

John Andrew Rose

1608Targeted Molecular Engineering of Dimethoxybenzenes for Non-Aqueous Redox Flow Batteries

Jeffrey Kowalski, Jinhua Huang, Liang Su, Lu Zhang, Fikile R. Brushett

1609(Spectro)Electrochemical Study of the Role of Electron Structure of Three Isomeric Benzendialdehydes on Their Reduction in Aprotic Media

Kristýna Kantnerová, Jiří Ludvík

1610Short-Step Anodic Synthesis of Color-Tunable Emissive Nucleoside Analogues

Yohei Okada, Kouhei Shimada, Yoshikazu Kitano, Kazuhiro Chiba

1611Electropolymerization of EDOT on Wireless Electrodes Toward Polymer Microfiber Networks

Shinsuke Inagi, Yuki Koizumi, Masato Ohira, Hiroki Nishiyama, Ikuyoshi Tomita

1612Electrochemical Intramolecular C-H Amination of Aromatic Compounds

Akihiro Shimizu, Tatsuya Morofuji, Jun-ichi Yoshida

1613Electroorganic Construction of Pyrazolidine-3,5-Diones

Tile Gieshoff, Siegfried R. Waldvogel

1614Electrochemical Study of Reactivity of Orthophthalaldehyde with Primary Amines

Joel Donkeng Dazie, Jiří Ludvík

1615Epoxide Formation Via Radical Cations and Biradicals

Ryoichi Akaba

1616Redox-Responsive 4 H-Bond Arrays for Supramolecular Applications

Diane K. Smith, Mario Cedano, Laurie A. Clare, Ghazwan M Darzi

1617Synthesis, Properties, and Theoretical Study of Extended Diynes and Their Analogs Bearing Two Amino Moieties

Koichi Mitsudo, Natsuyo Kamimoto, Nariaki Nakamura, Akina Tsutsumi, Seiji Suga

K02-Bioelectrochemistry: Analysis and Fundamental Studies

Organic and Biological Electrochemistry/Physical and Analytical Electrochemistry/Sensor

1618Electrochemical Potential Gradient As a Quantitative Test Platform for Cellular Oxidative Stress

Vytas Reipa, Carson Bryant, John Elliott, Donald Atha

1619The Effect of Carbon Potential on the Platelets/Carbon Interaction

Irina V Goroncharovskaya, Anatoly K. Evseev, Natalia V Borovkova, Yuliy V Andreev, Mojtaba Mirzaeian, Mark M Goldin

1620Prostate Cancer Biomarker Detection Using a 16-Sensor Electrochemical Microfluidic Immunoarray

Abby L Jones, Brunah A Otieno, Mohamed Sharafeldin, Amit A Joshi, Colleen E Krause, James F Rusling

1621Microsomal Bioelectrodes Modified with Nanostructures for Rapid Drug Metabolism and Inhibition Assays and Cost-Effective Green Synthesis

Sadagopan Krishnan, Charuksha Walgama, Rajasekhara Nerimetla

1622Electrochemical Behavior of Selenocystine at Gold Substrates

Elizabeth A. Karnaukh, Haopei Wang, Lindsey M. Walker, Marisa C. Buzzeo

1623Electrochemical Studies of L-Cysteine

Graham T. Cheek, Matthew A. Worosz

1624Real-Time Monitoring of Superoxide Anion Radical Generation in THP-1 Cells Using Iron-Porphyrin Modified Carbon Electrode

Shigenobu Kasai, Ankush Prasad, Akemi Takahashi, Ryo Matsuoka, Tomohiro Honmo, Tomoya Sugai, Hiroyuki Kikuchi, Shigeo Aoyagi, Tatsuo Aikawa, Takeshi Kondo, Makoto Yuasa

1625New Opportunities Offered By Lipid-Modified Electrodes to Interrogate Transmembrane Diffusion Mechanisms and Kinetics

Edmund C. M. Tse, Christopher J. Barile, Ying Li, John P. Gewargis, Nicholas A. Kirchschlager, Steven C. Zimmerman, Andrew A. Gewirth

1626Low Cost 3D Printed Biosensor Arrays for Biomedical Diagnostics

Karteek Kadimisetty, James F Rusling, Spundana Malla, Jennifer E Satterwhite

1627Electrochemical Microfluidic Immunoarray for Assessment of Aggressive Vs Indolent Forms of Prostate Cancer

Brunah A Otieno, Conan P Mercer, Abby L Jones, Colleen E Krause, Mohammed Sherafeldin, Amit A Joshi, Dónal Leech, James F Rusling

1628Characterizing Bioconjugated Nanoparticles By Nano-Impact Electrochemistry

Anahita Karimi, Akhtar Hayat, Silvana Andreescu

1629Optimization of Microelectrode Cholesterol Efflux Measurements By Platinum Crystallites on Carbon

Jim Burgess, Li Li

1630Ti/TiO_2 as an Alternative Substrate Material for Impedance Biosensors

Donghao Liu, Peter Rose, Kyle Newton Plunkett, Ian Ivar Suni

1631Preparation and Characterization of Bucky Paper Electrodes for Enzyme Electrocatalysis

Mayowa Akiwande Akinwale, Roberto Montealegre, Charuksha Walgama, Sadagopan Krishnan

1632Red Blood Cells Morphology Depending on Potential of Optically Transparent Electrode

Mogely Sh. Khubutiya, Anatoly K. Evseev, Mojtaba Mirzaeian, Natalia V Borovkova, Irina V Goroncharovskaya, Mark M Goldin

1633The Regularities of Electrolytic Dissociation of 1,1-Cyclopentanediacetic and 1,1-Cyclohexanediacetic Acids

Elene Kvaratskhelia, Rusudan Kurtanidze

1634DNA Films As Sensing Platforms for Detection of DNA Damage Induced By Peroxynitrite

Heba azmy Salim, Mekki Bayachou

1635Rapid Thermal Annealing in MgO Sensing EIS Membrane for Bio-Sensor Applications

Chun-Fu Lin

L01-Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session

Physical and Analytical Electrochemistry

1636Silk-Derived Graphene-like Carbon Material with High Electrocatalytic Activity for Oxygen Reduction Reaction

Junfeng Zhang, Qingfa Wang, Xiangwen Zhang, Li Wang, MingLiang Du, Han Zhu

1637Probing the Role of Imidazolium-Based Ionic Liquids on CO2 Electroreduction Using Dynamic Impedance

Robert L Sacci, Daniel A Lutterman, Nancy J Dudney, Joel Rosenthal

1638Fabrication of an Induction Heated Gold Microelectrode for SECM Applications

Timothy J Dowell, David O Wipf

1639Limits of Acetonitrile Dryness Via Molecular Sieve Method

Patrick Andrew Staley, Eric M Lopez, Joy Metzger, Diane K. Smith

1640Kinetics of Fast Electrochemical Processes Studied By Impedance Spectroscopy. Frequency Dispersion at High Frequency Range

Pawel Kulboka, Piotr Polczynski, Rafal Robert Jurczakowski

1641Quasireversible Is Irreversible Dressed up

David A. Harrington

1642Unified Thermodynamics for All Concentrations of Electrolytes Based on Hydration and Partial Dissociation (Without Activity Coefficients, 1995-)

Raji Heyrovska

1643Techniques to Improve the Efficiency of Bulk Heterojunction Polymer Solar Cells

Ifedayo Joseph Ogundana, Simon Y. Foo, Zhibin Yu

1644Dye-Sensitized Solar Cells in Humidity Environment: A Suitable Fabrication Procedure and Outdoor Test of Cell Stability

Hoang Thai Nguyen, Linh Thi Phuong Tran, Nghiem Van Le, Long Vo, Thoa Thi Phuong Nguyen

1645Molecular Tailoring for Efficient Conversion of Near-Infrared Light in Dye-Sensitized Solar Cellsoral

Vittoria Novelli, Nadia Barbero, Claudio Magistris, Claudia Barolo, Frédéric Sauvage

1646 Local pH Determines Lanthanum Accumulation on Electrodes in Aqueous Solution

Jerome T. Babauta, Adan Medina, Haluk Beyenal

1647 Synthesis and Electrochemical Characterization of Novel Organoborohydride Compounds

David Cardoso, Cesar A.C. Sequeira, Eric Abbey, Diogo M.F. Santos

1648 Gold-Platinum Nanostructures Formed By Thermal Dewetting

Annie Hoang, Corie Horwood, Viola Birss

1649 Absolute Potentials of the Standard Hydrogen Electrode (4.20 V), Standard Reference Electrodes & Aqueous Redox Couples of Elements

Raji Heyrovska

1650 Quantitative one-Dot□ Differential Electrochemical Mass Spectrometry Study on Electro-Oxidation of Ethanol at Carbon-Supported Pt and Ir-Containing Catalysts

Yunteng Qu, Yunzhi Gao, Long Wang, Can Li, Geping Yin

1651 Modified TiO_2 Nanotubes for Photoelectrochemical (PEC) Water Splitting Applications

Talal Awad Aljohani

1652 The Nanomechanics and Nanodynamics of Confined Water

Shah Haidar Khan, Peter Manfred Hoffmann

1653 Hybrid Electrocatalytic Nanomaterials for Isopropanol Oxidation

Krzysztof Miecznikowski, Lidia Adamczyk, James A. Cox, Pawel J Kulesza

1654Photochemical Degradation of Diclofenac Sodium By Nanophotocatalyst ZnO Doped C, N, S in Aqueous Solution Using UV Irradiation

Masoud Giahi, Hajar Taghvi

1655Non-Stechiometric Titanates Embellished with a Catalyst and Employed for Visible-Light Water Splitting

Krzysztof Bienkowski, Pawel J Kulesza

1656Voltammetric Study and Electrodeposition of Zinc from Room Temperature Ionic Liquid 1-Butyl-1-Methylpyrrolidinium Bis((trifluoromethyl)Sulfonyl)Imide

Po-Yu Chen, Yu-Sheng Wang

1657Underpotential Deposition of Nickel on Cu_2o Films and Its Effects on Reactivity and Stability of Cu_2o Films

Akiko Fillinger, Kaitlyn DeHority, Noah Budin

1658Study on the Behavior of Halide Ions Contained in Ionic Liquids on Au(111) Electrode Surface

Kazuhisa Tamura, Yasuo Nishihata

1659Investigation of a Redox-Responsive 4 H-Bond Array Capable of Strong Self-Dimerization

Ghazwan M Darzi, Diane K. Smith

16603D-Polypyrrole Hydro-Sponge Thin Films for Electrochemical Applications

Jadielson Lucas da Silva Antonio, Susana I. Cordoba de Torresi, Roberto M. Torresi

1661Self-Consistent Theory for Predicting Reaction Mechanisms and Potentials in Acid and Base: H(ads) and OH(ads) Deposition on the Pt(111) Electrode

Meng Zhao, Alfred B. Anderson

1662Voltammetric Sensor for the Determination of Diabetes Rrisk Biomarkers, 8-Hydroxydeoxyguanosine and 8-Hydroxyguanine

Rajendra N Goyal, Pankaj Gupta

1663Comparison of Molecular-Wires for Enhancing Charge Transport of Enzymatic Electrode Assemblies: A Glycerol Bioanode Model

Aishwarya Mahadevan, Sandun Fernando

1664Evaluation and Comparison of the Electric Field in the Physicochemical Properties of a Vertisol Type Soil and Sodium Bentonite

Maribel Pérez, José Miguel Rodríguez, César Gómez, Erika Bustos

1665Effect of Morphology Controlled Synthesis of BiOCl Photocathode By Chemical Vapor Deposition for Solar Water Reduction

Yoon Myung, Sriya Banerjee, Parag Banerjee

1666Conducting-Polymer-Supported Bacterial Biofilms As Active Matrices for Noble Metal and Molecular Catalytic Centers: Enhancement of Electroreduction of Oxygen and Carbon Dioxide

Pawel J Kulesza, Ewelina Seta, Weronika Lotowska, Iwona Agnieszka Rutkowska, Anna Wadas

1667Scanning Electrochemical Microscopy: A Tool to Study the Biomediated Calcification Process By Sporosarcina Pasteurii Biofilm

Dustin Harris, J Ganesh Ummadi, Dipankar Koley

1668Electrokinetic Treatment of Mercury - Polluted Soil Facilitated By Ethylenediaminetetraacetic Acid Coupled with a Reactor with a Permeable Reactive Barrier of Carbon to Recover Mercury (II) from Water

Diana Irene Trejo, Oscar Mora, Selene Sepúlveda, Erika Bustos

1669Solar Driven Processes at Semiconducting Metal Oxide Electrodes, Assisted By Non-Noble Metal Catalysts

Renata Solarska, Krzysztof Bienkowski, Marta Sarnowska, Jan Augustynski

1670Electrochromic Devices Using Electroactive Polymers and Nanoparticles for Visible and Near-Infrared Light Modulation

Christopher J. Barile, Michael D. McGehee

1671Nanodot Formation of Ferrocene-Terminated Self-Assembled Monolayers

Katsuyoshi Ikeda

1672Orientational Control of Electroactive Photosystem I on Chemically Modified Electrodes

David Cliffel, Evan Alexander Gizzie

1673Electrochemistry of $Co(TPTZ)_2$ Complex on a Carbon Paste Electrode Modified with TiO_2 Nanoparticles

Sinem Ortaboy, Gülten Atun

1674Electrocatalysis By Heme Proteins and Human Liver Microsomes Bound to Magnetic Nanoparticles and Immobilized on Electrodes

Sadagopan Krishnan, Gayan Premaratne, Rajasekhara Nerimetla, Ryan Matlock, Hongyun Liu, Charuksha Walgama

1675Fabrication of Different Crystalline Diamond Films and Their Application As Anodes for the Oxidation of Human Urine

Zhongjian Li, Hao Li, Xingwang Zhang, Lecheng Lei, Bin Yang

1676An Electroenzymatic CO2 Conversion to Formate on Cu Electrode Using NADH Co-Enzyme

Kwang-Deog Jung, Seung-Han Kim, Sungho Yoon

1677Micro-Thermal Stage and Custom-Made Pt-Ir Tips for High Temperature Electrical and Electrochemical Studies By Scanning Probe Microscopy

Chee Seng Ng, Jong Dae Baek, Vishal Zade, Adrian Villegas, Pei-Chen Su, Ashlie Martini, Min Hwan Lee

1678Electrochemical Preparation of Electro-active Polymers having Nitrogen Atom

Naoto Eguchi, Hiromasa Goto

1679Electrochemical Investigation of Titanium Electrode in Aqueous Tetrafluoroborate Solution and in Aqueous Formate Solution

Michael May, Elizabeth Paul, Vladimir Katovic

1680(Congreso Nacional de la Sociedad Mexicana de Electroquímica Poster Winner) Capillary Electrophoresis Coupled on Line with Mass Spectrometry Via an Electrospray Interface (CE-ESI-MS) for the Characterization of Cyclic Peptides and Their Possible Aggregation into Peptide Nanotubes

María Dámaris Cortez-Díaz, Fanny D'Orlyé, Silvia Gutiérrez-Granados, Luis Manuel de León Rodríguez, Anne Varenne

1681Combined Effect of Both Cadmium and Boric Acid on the Deposition of Zn-Ni and Influence of Copper on the Deposition of Nickel

Yassine Addi

1682Catalyzing Hydrogen Evolution Reaction By the Use of Earlier Transition Metal Nitrides

Younes Abghoui, Egill Skulason

1683Voltammetric Determination of Mercury in Biological Samples Using Crown Ether/Multiwalled Carbon Nanotube-Based Sensor

Rabeay Hassan, Manal Kamel, Hassan N.A. Hassan, Elmorsy Khaled

1684Preparation of $NiCo_2S_4$ Thin Films As Counter Electrodes for Dye-Sensitized Solar Cells Using Dip-Coating Method

An-Lin Su, Chin-Yu Chang, Jeng-Yu Lin

1685The Electrochemical Behaviour of Some Composite Coatings Obtained By Electrodeposition on Metallic Substrate

Florina Branzoi, Viorel Branzoi, Catalina Pacuretu, Zoia Pahom

1686CO_2 Electrochemical Reduction on Copper-Based Nanocatalysts: Investigation of Selectivity for Ethylene and Methane Via on-Line Mass Spectrometry

Mariana Romano Camilo, Wanderson Oliveira Silva, Fabio Henrique Barros de Lima

1687Polarization Controlled Electrocatalytic and Photoelectrocatalytic Activity of Ferroelectric Catalyst

Himmat Singh Kushwahab

1688Evaluation of Co-Adsorption Effect on Performance and Outdoor Stability of Organic Dye-Sensitized Solar Cells By Electrochemical Impedance Spectroscopy

Hoang Thai Nguyen, Linh Thi Phuong Tran, Thoa Thi Phuong Nguyen

1689Development of Poma/Ptaa Layer-By-Layer Films As Active Material for Electrochromic Devices

Wania Aparecida Christinelli, Ernesto Chaves Pereira

1690Photochemical Degradation of an Anionic Surfactant By TiO_2 nanoparticle Doped with C, N in Aqueous Solution

Masoud Giahi, Marzieh Zamiri

1691Characterization of Mineral Redox Properties By Electrochemical Impedance Spectroscopy

Miranda J Bradley, Maya Navarro, Paul G Tratnyek

1692Nitrogen-Doped Hollow Carbon Spheres As a Sensitive Electrochemical Sensor for Simultaneous Determination of Pb (II) and Hg (II)

Shantang Liu

1693Clay Composite Modified Electrodes II: Voltammetric Method for Simultaneous Detection of Dopamine and Serotonin

Augustine Ofori Agyeman, Chinye Frances Obata, Minh Tri Tran

1694Synthesis and Investigation of Poly(N-Isopropylacrylamide-co-N-vinylcarbazole) Hydrogels Morphological, Fluorescence and Electrical Properties

Argun T Gokceoren, Esra Alveroglu

1695Color Tests and Electrocanalytical Methods for the Preliminary Identification of Drugs

Krzysztof Miecznikowski, Pawel J Kulesza, Michal Ordak, Wojciech Jedral, Ewa Bulska, Karol Grela, Wioletta Kosnik, Robert Bachlinski, Anna Duszynska, Anna Trynda

L02-Electrocatalysis 8

Physical and Analytical Electrochemistry

1696Oxygen Reduction in Nanoporous Metals Under Proton Diffusion Limited Conditions

Ellen Benn, Jonah Erlebacher

1697Oxygen Reduction over Dealloyed Pt Layers on Glancing Angle Deposited Ni Nanostructures and Efficient Water Oxidation over Easily Prepared Ir-Ni Oxide Nanoparticles

Chao Wang, Reza B. Moghaddam, Jason B. Sorge, Shuai Xu, Michael J. Brett, Steven H. Bergens

1698Platinum Alloy Nanocatalyst with Manipulated Particle Composition and Morphology for Improved ORR Property

Changlin Zhang, Sang Youp Hwang, Zhenmeng Peng

1699Synthesis of Pt-Cu Nano-Octahedra and Their Enhanced Electrocatalytic Activity for Oxygen Reduction Reaction

Na Tian, Bang-Au Lu, Zhi-You Zhou, Shi-Gang Sun

1700Effects of Composition and Structure on Performance and Durability of Pt-Ni Extended Surface Catalysts

Svitlana Pylypenko, Chilan Ngo, Sarah Shulda, Shaun M Alia, Bryan S Pivovar

1701Co Doped Pt_3 Co Intermetallic Compound As an Efficient Catalyst for Oxygen Reduction Reaction

Yige Zhao, Jingjun Liu, Feng Wang, Zhilin Li, Jing Ji, Meiling Dou

1702Hydrogen Peroxide Reduction in Aqueous Electrolytes: Influence of a Heterogeneous Decomposition Step

Nicholas Stefan Georgescu, Daniel Scherson

1703Increasing Stability and Activity of Core-Shell Catalysts By Preferential Segregation of Oxide on Edges and Vertexes: Oxygen Reduction on Ti-Au@Pt/C

Jue Hu, Lijun Wu, Kurian A Kuttiyiel, Kenneth R. Goodman, Chengxu Zhang, Yimei Zhu, Miomir B Vukmirovic, Michael G. White, Kotaro Sasaki, Radoslav R Adzic

1704Ultrasonic-Assisted Galvanic Replacement Synthesis for the Platinum Deposition on Palladium to Prepare Pd-Pt/MWCNT Electrocatalysts for ORR

Jesus Raymundo Zapata-Fernandez, Edgar Alonso Reynoso-Soto, Francisco Paraguay-

Delgado, Yadira Gochi, Sergio Perez-Sicairos, Shui Wai Lin-Ho, Karelid Garcia-Tapia, Rosa María Félix-Navarro

1705Ultra-Low Amount of Pt Decorated Pd-Based Nanoparticles for the Oxygen Reduction Reaction

Weiping Xiao, Sufen Liu, Huolin L. Xin, Deli Wang

1706Origin of Large Onset Overpotential and Sluggish Kinetics of the Oxygen Reduction Reaction on Pt(111) Surface

Junxiang Chen, Shengli Chen

1707Insights to the Complex Role of Surface Oxide in the Oxygen Reduction Reaction

Eric J. Coleman, Fen Zhang, Anne C. Co

1708(Invited) Electrocatalysis for Hydroxide Exchange Membrane Fuel Cells

Yushan Yan

1709Understanding the Effects of pH and Alkali Cations on Cyclic Voltammograms and the Hydrogen Oxidation Reaction on Transition Metal Catalyst Surfaces

Ian T. McCrum, Praveen Meduri, Michael A Hickner, Michael J. Janik

1710X-Ray Absorption Spectroscopy Study of the Pd-H System during HOR in an Operating PEMFC

Armin Siebel, Yelena Gorlin, Julien Durst, Moniek Tromp, Hubert A. Gasteiger

1711Hydrogen Peroxide Reduction of Fe Complex Based Oxygen Reduction Reaction Catalysts for Anion Exchange Membrane Fuel Cells

Hirofumi Kishi, Tomokazu Sakamoto, Koichiro Asazawa, Susumu Yamaguchi, Daiju Matsumura, Kazuhisa Tamura, Yasuo Nishihata, Tomoki Akita, Tsutomu Ioroi, Alexey Serov, Plamen Atanassov, Hirohisa Tanaka

1712How Intra-Particle Active Site Dispersion Impacts Electrocatalytic Activity

Douglas R. Kauffman, Dominic Alfonso, Christopher Andolina, Christopher Matranga, Jill E. Millstone

1713Stability of Group 4 and 5 Metal Oxide Cathode with Titanium Oxide Support for PEFCs

Ken-ichro Ota, Koichi Matsuzawa, Takaaki Nagai, Akimitsu Ishihara, Shigenori Mitsushima

1714Group 4 Metal Oxynitride Nanocatalysts for Oxygen Reduction Reaction in Acidic Media

Mitsuharu Chisaka, Yuta Ando, Yusuke Yamamoto, Noriaki Itagaki

1715Insulating Boron Nitride Nanosheet on Inert Gold Substrate As a Novel Electrocatalyst for Oxygen Reduction Reaction - Theoretical and Experimental Investigations

Kohei Uosaki, Hidenori Noguchi, Ganesan Elumalai, Hung Cuong Dinh, Andrey Lyalin, Tetsuya Taketsugu

1716Nitrogen and Sulfur Dual-Doped Iron-Graphene Catalysts for Oxygen Reduction Reaction

Yu-Chuan Lin, Chia-Chi Liu, Hsin-Chih Huang, Chen-Hao Wang

1717A Novel Electrode Architecture for Non-PGM and Low PGM Catalysts - Nanofibrous Network

Di-Jia Liu

1718Toward Proper Understanding of the Nature of the Active Sites in Non-PGM Catalysts and the Redox Mechanism for ORR

Qingying Jia, Jingkun Li, Sanjeev Mukerjee

1719Non-PGM ORR Catalysts Based on Transition Metals Alternative to Iron

Ulises Martinez, Edward F. Holby, Joseph H Dumont, Hoon T Chung, Piotr Zelenay

1720Non-PGM ORR Catalysts Prepared from Polyaniline-Type Polymers with Strong Affinity to Iron

Xi Yin, Hoon T Chung, Ulises Martinez, Joseph H Dumont, Geraldine M Purdy, Piotr Zelenay

1721Elucidating Carbon Structures in Highly Active Fe-N-C Catalysts for Oxygen Reduction

Gang Wu

1722Surfactant-Assisted Electrodeposition of Mn Oxides As Promising ORR/Oer Bifunctional Non-PGM Electrocatalysts: Factorial Design Study of the Electrodeposition Parameters

Pooya Hosseini Benhangi

1723DFT Studies of the Oxygen Reduction Reaction on Pristine and N-Doped Fe_3C/Graphene Catalyst

Mateusz Reda, Heine Anton Hansen, Tejs Vegge

1724ORR Activity of Pristine Graphite|Fe_3c Interfaces

Heine Anton Hansen, Mateusz Reda, Tejs Vegge

1725Facile Synthesis and Reaction Mechanism of Oxygen Evolution on RuO_2, IrO_2, and RuO_2@IrO_2 Core-Shell Nanocatalysts

Zhong Ma, Yu Zhang, Wenqian Xu, Yu-Chi Hsieh, Ping Liu, Lijun Wu, Yimei Zhu, Kotaro Sasaki, Radoslav R Adzic, Jia X. Wang

1726Controlled Electrochemical Surface Activation of Perovskite: Application to Highly Active Oxygen Evolution Catalyst

Alexis Grimaud, Arnaud Demortiere, Matthieu Saubanere, Walid Dachraoui, Marie-Liesse Doublet, Jean-Marie Tarascon

1727Transition Metals (Co, Fe, Ni)-N-C Electrocatalysts for Hydrogen Evolution Reaction in Acidic and Alkaline Solutions

Lulu Zhang, Wen Liu, Minhua Shao

1728Electrocatalytic Hydrogen Production

Atif Koca, Ali Riza Ozkaya, Duygu Akyuz

1729Synthesis and Performance of Doped Cu-W Oxide Semiconductors for Photoelectrochemical Water Splitting

Mackenzie Parker, Ruchi Gakhar, Dev Chidambaram

1730Molybdenum Sulfide Films By Atomic Layer Deposition As Electrocatalysts in Hydrogen Evolution Reaction

Hyunjung Shin

1731(Invited) Structure Design and Controlled Synthesis of Metal Electrocatalysts of High Surface Energy and High Activity

Shi-Gang Sun

1732Self-Terminated Electrodeposition of Ultrathin Pt Films on Ru: A Promising Way for Preparing Core-Shell Ru-Pt Catalysts

Yihua Liu, Thomas P. Moffat, Hoydoo You

1733Mechanistic Insights and Electrochemical Performance of Ceria Based Materials for Solid Oxide Electrolysis of CO_2

Neetu Kumari, M Ali Haider, Nishant Sinha, Suddhasatwa Basu

1734Oxide Reduction Kinetics on Platinum

Geer Qile, David A. Harrington

1735Microstructure Analysis of Polymer Electrolyte Membrane Fuel Cell Catalyst-Ionomer Inks and Cathode Catalyst Layers By Ultra Small Angle X-Ray Scattering

Nancy Kariuki, Deborah J Myers, Dash Fongalland, Alex M. Bonastre, Jonathan Sharman

1736Heterojunction Electrode Designed for Saline Wastewater Electrolysis

Yang Yang, Michael R Hoffmann

1737Gold-Palladium Catalysts: Towards H_2O_2 Production

Enrico Pizzutilo, Simon Freakley, Simon Geiger, George Polymeros, Claudio Baldizzone, Graham J. Hutchings, Karl J.J. Mayrhofer

1738Electrocatalytic Reduction of Selenate on Gold Electrodes in the Presence of Copper (II)

Jonathan Strobl, Daniel Scherson

1739Electroreduction of Selenium Oxyanions in the Presence of Methyl Viologen

Qi Han, Daniel Scherson

1740A Comprehensive DFT Guide for Highly Efficient Electrochemical Ammonia Synthesis on New Class of Electrocatalysts

Younes Abghoui, Egill Skulason

1741Graphene-Supported Fe, Co, Ni Carbon Nitride Electrocatalysts for the ORR in Alkaline Environment

Enrico Negro, Antoine Bach Delpeuch, Keti Vezzù, Federico Bertasi, Graeme Nawn, Giuseppe Pace, Alberto Ansaldo, Mirko Prato, Massimo Colombo, Vittorio Pellegrini, Francesco Bonaccorso, Vito Di Noto

1742(Invited) Electrocatalysis in Low Temperature Fuel Cells

Claude Lamy, Benoît Guenot

1743Experimental Study and CFD Model for Partial Oxidation of Methane over Self-Sustained Electrochemical Promotion Catalyst

Xiangyang Zhou, Hao Huang, Hongtan Liu

1744Tuning Pt-Skin or M-Rich Surface on Bimetallic Nanoparticles (Pt_3Ni, PtBi, Pt_3Co) for Enhanced Electrocatalytic Activities

Yan-Xia Jiang, Bin-Wei Zhang, Chun-Hua Zhen, Shi-Gang Sun

1745Electrocatalysis at Noble-Metal-Derived Pure Metallic Aerogels

Bin Cai, Wei Liu, Dan Wen, Alexander Eychmüller

1746Effects of Pb in Electrocatalysis of Ethanol Oxidation Reaction on Pd/C and Pdru/C Catalysts in Alkaline Media

Rongrong Chen, Junsong Guo

1747Interactions of Metal Oxo Species with Platinum-Based Catalysts Toward More Efficient Electrooxidation of Dimethyl Ether: Comparison to Methanol

Pawel J Kulesza, Iwona Agnieszka Rutkowska, Jakub P. Sek, Piotr Zelenay

1748Effect of Ni^{2+} Contaminant on Methanol Oxidation Reaction on the Anode Electro-Catalyst of Direct Methanol Fuel Cell

Soghra Jalilpour, Christina Bock, Barry R. MacDougall

1749Rhodium-Containing Multi-Layered Mixed-Metal Oxides As Active Supports for Dispersed PtRu Nanoparticles during Electrooxidation of Ethanol

Iwona Agnieszka Rutkowska, Anna Wadas, Aleksandra Rogalinska, Pawel J Kulesza

1750Electrocatalytic Oxidation of Ethanol on Noble Metal Nanoalloys

Adam Lewera, Justyna Piwowar, Maciej T. Gorzkowski, Barbara Gralec

1751Size, Chemical State, and Reactivity Correlations during the Electrochemical Oxidation of 2-Propanol over Au Nanoparticle Catalysts

Yong-Wook Choi, Ilya Sinev, Hemma Mistry, Ioannis Zegkinoglou, Beatriz Roldan

1752The Effect of Ni in the Pt-Ni Electrocatalyst for the Glycerol Electro-Oxidation Reaction

Isaac Velázquez-Hernández, Angelica C. Gómez Monsiváis, Lorena Álvarez-Contreras, Minerva Guerra-Balcázar, Janet Ledesma-García, Luis Gerardo Arriaga, Noé Arjona

1753Electrochemical Reduction CO_2 to Formate on Sno/Gdl Electrode

Jinli Qiao

1754Electrochemical Reduction CO_2 to Formate on Cu_xo Electrode

Jinli Qiao

1755Synthesis of Reduced Graphene Oxides-Supported Ptau Catalysts and Its Electrocatalytic Activity for Formic Acid Oxidation

Takao Gunji, Arockiam John Jeevagan, Toyokazu Tanabe, Masanari Hashimoto, Shingo Kaneko, Futoshi Matsumoto

1756Enhancement of Electrocatalytic Oxygen Reduction Reaction on Pd_3pb Ordered Intermetallic Catalyst in Alkaline Aqueous Solutions

Futoshi Matsumoto, Arockiam John Jeevagan, Takao Gunji, Toyokazu Tanabe, Shingo Kaneko

1757The CO Induced the Deposition of Hightly Ordered Pt Monolayer on Au(111) Electrode and Its Electrocatalytic Properities

Weicheng Liao, Shuehlin Yau

1758 Activity and Long-Term Stability Study of Pt-Y/C Electrocatalysts for Oxygen Reduction Reaction

Gabriel Christiano da Silva, Nathalia Abe Santos, Joelma Perez

1759 Dynamic Fluctuation of Activity in Fe/N/C Oxygen Reduction Reaction Catalyst Depending on Heat Treatment Time

Go Tei, Akihiro Sakai, Satoshi Yotsuhashi, Takao Hayashi, Masato Aizawa

1760 Thermal Treatment of MgO-Protected Ptsn/C Catalyst: Stability and Ethanol Oxidation

Nathalia Abe Santos, Joelma Perez

1761 Metallophthalocyanine/C/Nafion Composites for Electrocatalysis of Oxygen Reduction

Zuhal Yazar, Mehmet Piskin, Zafer Odabas, Ali Riza Ozkaya

1762 Prussian Blue Nanocubes on Reduced Graphene Oxide As a Modified Platinum Electrode for Synergistic Methanol Oxidation

Kyuwon Kim, Shanmugam Manivannan, Inhak Kang

1763 High Performance Fe- and N- Doped Hierarchically Porous Carbons Catalyst Derived from Polyquaternium for Oxygen Reduction

Jinli Qiao

1764 Pd/CNT Catalysts for Electrochemical Oxidation of Small Organic Molecules in Alkaline Media

Jose Estrada, Jennifer Flores, Kelly Nguyen, John Haan, Omar Muneeb

1765Synthesis and Conductivity of Directly Cross-Linked Chitosan / Bis(2-chloroethyl) Ether-1,3-Bis[3-(dimethylamino)Propyl]Urea Copolymer As Alkaline Anion-Exchange Membranes

Jinli Qiao

1766PdCu/C Catalysts for the Electrochemical Oxidation of Renewable Polyalcohols

John Haan, Omar Muneeb, Jose Estrada, Jennifer Flores, Kelly Nguyen

1767Electrochemical Approaches to Synthesis Different (di)Phenylphosphine Oxide Derivatives

Vera Khrizanforova, Mikhail Khrizanforov, Tatyana Gryaznova, Yulia Budnikova

1768Effects of Pbon Electrocatalysis of Alcohol Oxidation Reaction on Pt/C Catalysts in Alkaline Media

Rongrong Chen, Junsong Guo

1769Tolerance of Impurities in Bioethanol on Pd/C and Pdru/C Catalysts Toward the Ethanol Oxidation Reaction in Alkaline Media

Rongrong Chen, Jing Qi, Junsong Guo, Peter Schubert, Josh Hyden, E. J. Taylor

1770Electrochemical Conversion of Cis,Trans-muconic Acid to Trans,Trans-muconic Acid and Trans-3-Hexenedioic Acid for Bio-Based Polymer Production

John Edward Matthiesen, Jack M Carraher, Monica Vasiliu, David A Dixon, Jean-Philippe Tessonnier

1771Effect of Water-to-Surfactant Ratio (Ï□$_o$) in the Ynthesis of Pt/Mwcnts By Inverse Microemulsion for the Oxygen Reduction Reaction

Carolina Silva-Carrillo, Rosa María Félix-Navarro, Edgar Alonso Reynoso-Soto, Francisco Paraguay-Delgado, Gabriel Alonso

1772Platinum Deposited on Carbon with Different Surface Properties for PEFC Application

Akari Hayashi, Zhiyun Noda, Kazunari Sasaki

1773Niobium Oxide/Carbon Supported Platinum and Platinum-Cobalt Nanocomposites As Electrocatalysts for Fuel Cells

Virginija Kepeniene, Raminta Stagniunaite, Loreta Tamasauskaite-Tamasiunaite, Eugenijus Norkus

1774Pt Nanoparticles Supported on Porous Antimony-Doped Tin Dioxide Aerogel As Cathode Material for Proton-Exchange Membrane Fuel Cells: Electrocatalytic Activity and Degradation Mechanism

Gwenn Cognard, Guillaume Ozouf, Christian Beauger, Marian Chatenet, Frederic Maillard

1775Understanding Electrocatalyst Morphology, Dispersion, and Stability in Catalyst Layers of PEM Fuel Cells Via 3D Electron Tomography

Karren L. More, Brian Sneed, David A. Cullen

1776Microporous Organic Polymers Derived Microporous Carbon Supported Pd Catalysts for Oxygen Reduction Reaction: Impact of Framework and Heteroatom

Jingyu Wang, Kunpeng Song, Deli Wang, Tao Li

1777Palladium Nanoparticles Supported on 3D-Graphene Nanosheets for Oxygen Reduction Reactions in Alkaline Media

Sadia Kabir, Alexey Serov, Plamen Atanassov

1778Kinetic Study of the Oxygen Reduction Reaction on Alpha-$Ni(OH)_2$ and Alpha-$Ni(OH)_2$ Supported on Graphene Oxide

Elaheh Farjami, L. Jay Deiner

1779Nitrogen-Doped Carbon Encapsulated Cobalt Oxide Nanoparticles As a Synergistic Catalyst for Oxygen Reduction Reaction in Alkaline Solution

Jingjun Liu, Min Liu, Zhilin Li, Jing Ji, Meiling Dou, Feng Wang

1780 Activity Trends of Co_3O_4 on Metallic Interlayers Supported on Porous Carbon Support

Koshal Kishor, Sulay Saha, Raj Ganesh Pala, Sri Sivakumar

1781 Two-Dimensional $Ni(OH)_2$@Pt Nanosheets: High Activity Fuel Cell Oxygen Reduction Reaction Electrocatalysts

Christopher Rhodes, Fernando Godinez-Salomon

1782 Efficient Oxygen Reduction Electrocatalysis at Nickel-Iron Mixed Oxide Coated Microelectrode Arrays

Richard L Doyle

1783 Fabrication of $LaMnO_{3+\delta}$ Oxygen Reduction Reaction Catalyst using Laser Ablation Synthesis in Solution Method

Wan Sik Kim, H. J. Lee, S. S. Lee, J. H. Kwak, G. Anoop, H. J. Lee, J. Y. Jo

1784 Electrocatalytic and Photo-Assisted Electrocatalytic Properties of Multimetallic Porphyrins Arrangements for Carbon Dioxide Reduction

Mauricio Isaacs, Francisca Benavente, Diego Quezada, Jessica Honores, Carlos Diaz, Guillermo Ferraudi, Macarena Garcia

1785 Selectivity Control in the Electroreduction of CO_2 over Nanostructured Catalysts

Hemma Mistry, Ana Sofia Varela, Rulle Reske, Peter Strasser, Beatriz Roldan

1786 Investigating High Current Densities in Ionic Liquid Mediated Electrolysis of Carbon Dioxide

Sebastian Stefan Neubauer, Ralf Karl Krause, Dirk M. Gudi, Guenter Schmid

1787Impact of Catalyst Support on Activity and Selectivity of Gold Nanoparticles for the Carbon Dioxide Reduction Reaction

Steven Michael Brown, Chaerin Kim, Yung Wei Hsiao, Tasneem K Salih, Ali Bumajdad, Fikile R. Brushett

1788Bimetallic Gold-Copper Nanotube Catalyst for Cost Efficient and Selective Electrochemical Reduction of Carbon Dioxide to Carbon Monoxide

Steven Michael Brown, Yung Wei Hsiao, Chaerin Kim, Fikile R. Brushett

1789Role of Superoxide Anion in the Oxygen Reduction Reaction in Non-Aqueous Electrolytes with a Proton or Lithium Source

Yelong Zhang, Xinmin Zhang, Jiawei Wang, Yuhui Chen, William C. McKee, Peter G. Bruce, Ye Xu, Zhangquan Peng

1790Electrochemically Driven Gas Phase Ethylene and CO Oxidation on Pt/Yttria-Stabilized Zirconia Catalysts

Elena A. Baranova, Rima Isaifan, Spyridon Ntais, Martin Couillard

1791Electrocatalyticaly-Assisted Oxidative Dehydrogenation of Lower Alkanes to Olefins

Anshuman Fuller, Doruk Dogu, Katja Binkley, Seval Gunduz, Nathaniel Kramer, Anne C. Co, Umit S. Ozkan

1792Electrochemical Promotion of Catalysis

Philippe Vernoux

1793Analysis of High Temperature Co-Electrolysis Cells Via Electrochemical and Surface Spectroscopy

Ann V Call, Christopher Tumilson, Denis J Cumming, S.F. Rebecca Taylor, Chris Hardacre, Rachael H Elder

L03-Biological Fuel Cells 7

Physical and Analytical Electrochemistry/Energy Technology

1794Enhancement in Production of Electricity from Wastewater Using Microbial Fuel Cell

Jarina Joshi

1795Tailoring Microbial Fuel Cells for Production of Hydrogen Peroxide

Michelle Young, Dongwon Ki, Mikaela Stadie, Julia Thompson, Nadratun Chowdhury, Sudeep Popat, Bruce Rittmann, César I Torres

1796Small Scale Ceramic MFCs for Efficient Energy Harvesting from Wastewater and Full System Development

Iwona Gajda, John Greenman, Chris Melhuish, Ioannis Ieropoulos

1797On Design, Operation, and Characterization of Microbial Electrochemical Cells with Reduced Overpotentials

Dongwon Ki, Sudeep Popat, César I Torres

1798(Invited) Microbial Fuel Cell Development for Practical Applications Robotics, Urinals and Novel Transistor Analogy

Ioannis Ieropoulos, Iwona Gajda, Jiseon You, Chris Melhuish, John Greenman

1799(Science for Solving Society's Problems Challenge Grant Winner) SPEED: Sanitation and Processing for Energy with Electrochemical Devices

Gemma Reguera

1800(Science for Solving Society's Problems Challenge Grant Winner) Self-Powered Supercapacitive Microbial Fuel Cell

Carlo Santoro, Francesca Soavi, Alexey Serov, Catia Arbizzani, Plamen Atanassov

1801Bioelectrochemical Systems for Electricity and Hydrogen Production in Biorefinery

Abhijeet P. Borole

1802(Invited) Synthesis and Characterization of DNA-Inspired Organic Nanowires

Alon Gorodetsky

1803Bio-Inspired Photoresponsive Regulator for Proton Cross-Membrane Transport

Ying Li, Edmund C. M. Tse, Christopher J. Barile, Andrew A. Gewirth, Steven C Zimmerman

1804Exploring Extracellular Electron Transfer in Hyperthermophiles for Electrochemical Energy Conversion

Narendran Sekar, Chang-Hao Wu, Michael W. W. Adams, Ramaraja P. Ramasamy

1805Mushroom-Derived Flow Battery Electrolytes

Patrick J Cappillino, Haobo Huang, Joseph Wheeler, Rachael Howland

1806Metallization of DNA Origami to Form Electrically Conductive ~10 Nm Diameter Nanowires

Bibek Uprety, John Harb

1807Metagenomic and Metatranscriptomic Analysis of an Electromethanogenic Microbial Community

Sofia Babanova, Kayla Carpenter, Shunichi Ishii, Shino Ishii, Michael Flynn, John Hogan, Orianna Bretschger

1808The Role of Shewanella Oneidensis MR-1 Structural Proteins in Electrochemical Performance and Biofilm Development

Jose Alberto Cornejo, Kateryna Artyushkova, Sofia Babanova, Linnea K Ista, Caroline Marie Ajo-Franklin, Plamen Atanassov

1809Elucidating Molecular Underpinnings of Extracellular Electron Transfer in Bioelectrochemical Systems Using Evolutionary Genomics Approaches

Sujal Phadke, Kayla Carpenter, Orianna Bretschger

1810Characterization of Electrochemical Activity in Four Alkaline Hot Springs in Heart Lake Geyser Basin, Yellowstone National Park

Abdelrhman Mohamed, Adan Medina, Phuc Thi Ha, Brent Peyton, Haluk Beyenal

1811(Invited) Customizing Proteins and Microbes for Biological Fuel Cells

Caroline Marie Ajo-Franklin, Moshe Baruch, Tatsuya Fukushima

1812(Invited) Microbial Fuel Cells for Wastewater Treatment - from Lab to Practice

Orianna Bretschger, Sofia Babanova, Jason Jones, Tony Phan, Kayla Carpenter, Shirley Chan, Sujal Phadke, Shing Chen

1813(Invited) Disentangling the Roles of Free and Cytochrome-Bound Flavins in Extracellular Electron Transport from Shewanella Oneidensis MR-1

Shuai Xu, Yamini Jangir, Mohamed El-Naggar

1814Conductance and Capacitance of Electrode-Respiring Geobacter Sulfurreducens Biofilms Using a Quartz Crystal Microbalance and Electrochemical Impedance Spectroscopy

Jerome T. Babauta, Haluk Beyenal

1815Understanding Electron Transport in a Durable Mixed Community Microbial Biocathode Enriched from Seawater

Matthew D Yates, Brian J Eddie, Nicholas J Kotloski, Nikolai Lebedev, Anthony P Malonoski, Baochuan Lin, Sarah Strycharz-Glaven, Leonard M Tender

1816Electrons from Solid Electrode Alter Phototrophic Mat Morphology and Metabolic Activity

Phuc Thi Ha, Ryan Scott Renslow, Erhan Atci, Patrick N. Reardon, Stephen Lindemann, James Fredrickson, Douglas Call, Haluk Beyenal

1817(Invited) Overcoming Biocathode Limitations in Bfcs: Enhancing O_2 Concentration with Micelles

David P Hickey, Kelan Albertson, Ross D Milton, Shelley D. Minteer

1818Computational Approaches for Rational Design of Electrodes for Biofuel Cells and Biosensors Applications

Ivana Matanovic, Sofia Babanova, Plamen Atanassov

1819Deep Oxidation of Multiple (Poly)Saccharides at a Bi-Enzymatic Bioelectrode

Ross D Milton, Mengwei Yuan, David P Hickey, Atsuya Sugawara, Clemens Peterbauer, Dietmar Haltrich, Shelley D. Minteer

1820Direct Electron Transfer Mechanisms Applied Toward the Development of an Enhanced Photoelectrochemical Biofuel Cell

Ryan J. Lopez, Andrew Shreve, Plamen Atanassov

1821Impact of Oxygen on Glucose Oxidation Kinetics in a Redox Polymer Mediated Glucose Oxidase Electrode

Scott Calabrese Barton, Deboleena Chakraborty, Harshal Bambhania, Hao Wen

1822NADH Bioelectrocatalysis at a Naphthoquinone Redox Polymer

Sofiene Abdellaoui, Ross D Milton, Timothy Quah, Shelley D. Minteer

1823One-Step Synthesis of Hydrangea-like Cu2O@N-
Doped Activated Carbon As Air Cathode Catalyst in Microbial Fuel Cell

Kexun Li, Ziqi Liu

1824Influence of Different Morphology of Three-Dimensional Cu_xo with Mixed Facets Modified Air-Cathodes on Microbial Fuel Cell

Kexun Li, Ziqi Liu

1825Novel Fe-N-C Catalysts from Organic Precursors for Neutral Media and Microbial Fuel Cell Application

Carlo Santoro, Alexey Serov, Santiago Rojas-Carbonell, Lydia Stariha, Jonathan Gordon, Kateryna Artyushkova, Plamen Atanassov

1826Recent Advances in Biocathodes Based on Conductive 3D Structures for Biofuel Cells

Serge Cosnier

1827Development and Comparison of Membrane-/Mediator-Free Enzymatic Biofuel Cells Using Carbon Nanotube-Based Supports of Varying Morphology

Alan S. Campbell, Mohammad F. Islam, Alan J. Russell

1828(Invited) Electrode Nanostructuration for Electricity Production By H_2/O_2 Enzymatic Fuel Cells

Elisabeth Lojou, Karen Monsalve, Mazurenko Ievgen, Cristina Gutierrez-sanchez, Nicolas Mano, Serge Cosnier

1829The Addition of Ortho-Hexagon Nano Spinel Co_3O_4 to Improve the Performance of Activated Carbon Air Catho de Microbial Fuel Cell

Baochao Ge, Kexun Li

1830Integration of Non-Platinum Metal Group Catalysts with Bilirubin Oxidase into a Hybrid Material for Oxygen Reduction Reaction: Interplay of Chemistry and Morphology

Santiago Rojas-Carbonell, Sofia Babanova, Alexey Serov, Kateryna Artyushkova,

Michael J Workman, Carlo Santoro, Yevgenia Ulyanova, Sameer Singhal, Plamen Atanassov

1831The Role of Micropore and Mesoporous in Activated Carbon As Air-Cathode Catalyst in Microbial Fuel Cell for Oxygen Reduction Reaction

Yi Liu, Kexun Li

1832Inverse Spinel $NiCo_2S_4$ Nanoparticles Coated on Activated Carbon As an Electrocatalyst Applied in Air Cathode Microbial Fuel Cells

Liangtao Pu, Kexun Li

1833(Invited) Limitations in Electrochemically Active Biofilms

Haluk Beyenal, Jerome T. Babauta

1834Using Electrochemical Techniques to Elucidate Electron-Transport Mechanisms in Microbial Anode Respiration

Rachel Yoho, Bradley Lusk, Sudeep Popat, César I Torres

1835Establishing Direct Electron Transfer in Cyanobacteria for Photocurrent Generation

Narendran Sekar, Ramaraja P. Ramasamy

1836Electron Transport in in Situ and Ex Situ Electroactive Microbial Biofilms

Matthew D Yates, Hung Phan, Thuc-Quyen Nguyen, Leonard M Tender

1837Spatially Resolved Confocal Resonant Raman Microscopic Analysis of Anode-Grown Geobacter Sulfurreducens Biofilms

Nikolai Lebedev, Sarah Strycharz-Glaven, Matthew Yates, Leonard M Tender

1838Understanding the Effect of Oxygen on Shewanella Oneidensis MR-1 per-Cell Extracellular Electron Transfer Rate

Mengqian Lu, Greg Wanger, Shirley Chan, Orianna Bretschger

1839 Geobacter Sulfurreducens Electrodes for Nitrate Reduction in Ground Water

Krysti L. Knoche, Julie N Renner, Shelley D. Minteer

1840 Optimized Nanoelectrode Geomerty for Enhanced Direct Extraction of Photosynthetic Electrons from Living Single Algal Cells

Hyeonaug Hong, WonHyoung Ryu

1841 Influence of Anode Configuration on Flow Distribution and Performance in Tubular Microbial Fuel Cells

Auvid Mirhosseini, Michael Salvacion, Shing Chen, Sofia Babanova, Orianna Bretschger

1842 Taxonomic Dynamics of Nitrate Reducing Microbial Fuel Cell Communities

Michael Salvacion, Shunichi Ishii, Shino Ishii, Lauren Bussey, Kayla Carpenter, Sofia Babanova, Orianna Bretschger

1843 Microbial Fuel Cell Prototyping for Pilot-Scale Applications

Jason Jones, Shing Chen, Tony Phan, Shirley Chan, Sofia Babanova, Sujal Phadke, Orianna Bretschger

1844 The Effect of Cation Exchange Membrane on Long-Term Electromethanogenic Performance

Kayla Carpenter, Shino Ishii, Shunichi Ishii, Sujal Phadke, Sofia Babanova, Michael Flynn, John Hogan, Orianna Bretschger

1845 Operation and Performance of Large-Scale MFCs for Treating Brewery Waste

Shing Chen, Michael Salvacion, Auvid Mirhosseini, Sofia Babanova, Orianna Bretschger

1846 A PEMFC System Operating with Biohydrogen

Ngan Hue Dai, Tam Anh Nguyen Duong, Tran Van Man

1847Membraneless Ethanol/O_2 Biofuel Cell Using PQQ-Dependent Alcohol and Aldehyde Dehydrogenase Along with Au Nanoparticles

Sidney Aquino Neto, Ross D Milton, David P Hickey, Adalgisa Rodrigues De Andrade, Shelley D. Minteer

1848Micro Computed Tomography As Powerful Tool for Analyzing Post Mortem Biofilm and Carbonate on Operated Cathode in Single Chamber Microbial Fuel Cell

Maurizio Santini, Manfredo Guilizzoni, Massimo Lorenzi, Plamen Atanassov, Enrico Marsili, Stephanie Fest-Santini, Pierangela Cristiani, Carlo Santoro

1849Depth-Resolved Nanospray Desorption Electrospray Ionization Mass Spectroscopy in Electrochemically Active Biofilms

Erhan Atci, Timothy Ewing, Haluk Beyenal

1850Characterization and Optimization of Gas Diffusion Cathode for Single-Chamber Microbial Fuel Cells Application

Shirley Chan, Tony Phan, Sofia Babanova, Carlo Santoro, Plamen Atanassov, Orianna Bretschger

1851Strategies for Efficient Microbial Fuel Cell Operation

Tony Phan, Shirley Chan, Sofia Babanova, Orianna Bretschger

1852Microbial Fuel Cell Anode Materials: Supporting Biofilms of Geobacter Sulfurreducens

Ciana Lopez, Carlo Santoro, Plamen Atanassov, Matthew D Yates, Leonard M Tender

1853Development of a Microbiosensor for Acetate Detection in Biofilms

Erhan Atci, Jerome T. Babauta, Sujala T. Sultana, Haluk Beyenal

1854Acetate Detection with a Living Biosensor – The Capability of Anodic Biofilms

Jörg Kretzschmar, Jan Liebetrau, Michael Mertig, Falk Harnisch

1855Biosensor/Biofuel Cell System for Lactate Detection in Sweat, Targeted Towards Human Performance

Yevgenia Ulyanova, Sergio Garcia, Rubi Figueroa-Teran, Sofia Babanova, Erica Pinchon, Ulf Lindstrom, Plamen Atanassov, Sameer Singhal

1856Self-Powered Arsenic Biosensor Based on the Inhibition of Laccase By As^{3+} and As^{5+}

Tao Wang, Ross D Milton, Sofiene Abdellaoui, David P Hickey, Shelley D. Minteer

1857Paper-Based Biofuel Array for Self-Powered Wearable Biosensors

Isao Shitanda, Misaki Momiyama, Saki Nohara, Risa Iwashita, Seiya Tsujimura, Yoshinao Hoshi, Masayuki Itagaki

1858Sediment Surface Anodes As a Microbial Fuel Cell Deployment Scheme

Kenneth Erich Richter, Bart David Chadwick, Jefferey Scott Kagan

1859Membrane-Less Microbial Fuel Cell Powering a Smart Phone: A Self-Stratifying Urine Column

Xavier Alexis Walter, Iwona Gajda, Samuel Forbes, Andrew Stinchcombe, John Greenman, Ioannis Ieropoulos

1860On-Body Energy Harvesting: Wearable Biofuel Cells

Wenzhao Jia, Amay Banodkar, Joseph Wang

1861Fabrication and Evaluation of an Air-Breathing Microfluidic Fuel Cell Employed Enzymatic Electrodes for Lactate Oxidation

Diana Dector, David P Hickey, Ross Milton, Andres Dector, Luis Gerardo Arriaga, Janet Ledesma-García, Shelley D. Minteer

1862The Peformance of Nano Urchin-like $NiCo_2O_4$ Modified Activated Carbon As Air Cathode for Microbial Fuel Cell

Kexun Li, Baochao Ge

1863Iron-Based Electrocatalysts Supported on Nanostructured Carbon to Enhance Oxygen Reduction in Microbial Fuel Cells

Barbara Mecheri, Alessandro Iannaci, Alessandra D'Epifanio, Maria Jesus Nieto-Monge, Maria Jesus Lázaro, Silvia Licoccia

1864Hollow-Spherical Co/N-C Nanoparticles Doped Activated Carbon Used As Efficient Electrocatalysts in Microbial Fuel Cell

Tingting Yang, Kexun Li

L06-Ionic Liquids as Electrolytes

Physical and Analytical Electrochemistry

1865(Invited) Ion Diffusion in Ionic Liquids: Single Molecule Fluorescence Spectroscopy

Tom Welton, Joshua B Edel, Alastair J.S. McIntosh, Aleksander Ivanov, Mohd A. B. Nawawi

1866Ionic Liquid Electrical Double Layer from Large Amplitude Fourier Transformed Ac Voltammetry Data

Anthony J Lucio, Scott K Shaw, Jie Zhang, Alan M Bond

1867(Invited) Electrodeposition of Yttrium Alloy from Ionic Liquids for High Performance Oxygen Reduction Reaction Catalysts

Hui Meng, Radoslav R Adzic

1868(Invited) How Spatial Heterogeneities Affect Dynamics of Ionic Liquids

Soham Roy, Zhuan-ping Zheng, Mischa Bonn, Johannes Hunger

1869Physiochemical Properties of Dialkylimidazolium Chloroaluminate Ionic Liquids Under Dynamic Conditions

Jonathan Joseph Coleman, Christopher A. Apblett, Plamen Atanassov

1870(Invited) Charge Transport and Structural Dynamics in Bulk and Ultrathin Films of Polymerized Ionic Liquids

Joshua R Sangoro

1871Portable Aluminum Deposition System: An Alternative Plating Process for Aluminum Electrodeposition Based on Ionic Liquids

Lorlyn Pacquibot Reidy, Li-Hsien Chou, Charles L. Hussey

1872(Invited) Semi-Solid Ionic-Liquid-Based Redox-Electrolytes with Noble Metal or Carbon Nanostructures: Enhancement of Redox Mediating Capabilities of Iodine/Iodide System

Pawel J Kulesza, Iwona Agnieszka Rutkowska, Justyna M. Orlowska

1873(Invited) Towards a Molecular Level Understanding of the Electrolyte Choline Chloride / Urea

Patricia A Hunt, Claire Ashworth, Tom Welton

1874Quantitative Comparison of Atomistic Molecular Dynamics Simulations and X-Ray Scattering of Polymerized Ionic Liquids

Hongjun Liu, Stephen J. Paddison

1875The Effect of Pressure on the Role of Tfsa Conformational Exchange in Ionic Liquids

Sophia Suarez, Armando Rua, David Cuffari, Kartik Pilar, Jasmine Hatcher, Sharon Ramati, James Wishart

1876(Invited) Ionic Liquid-Based Electrolytes for Alkaly Metal Batteries

Guinevere Giffin, Sangsik Jeong, Stefano Passerini

1877Copper Dissolution in Chloroaluminate Ionic Liquids

Chen Wang, Charles L. Hussey

1878(Invited) Ionic Liquids for Rechargeable Metal Batteries

Mega Kar, Patrick C Howlett, Maria Forsyth, Douglas R MacFarlane

1879(Invited) High Pressure Investigation of Charge Transport in Ionic Liquids

Marian Paluch, Zaneta Wojnarowska

1880Redox-Active Poly(ionic liquid)s As Active Materials in Energy Devices

Guiomar Hernandez, Mehmet Isik, David Mecerreyes

1881(Invited) Polymer Electrolytes Based on Ionic Liquids for PEMFC and Lithium Batteries

Cristina Iojoiu, Patrick Judeinstein, Sandrine Lyonnard

1882Physical and Chemical Analysis of Three Wide Electrochemical Window Ionic Plastic Crystals As Stable Electrolytes in Li-Ion Batteries

Keith J Stevenson, Anthony Dylla, Aoife O'Mahony

1883(Invited) Polymerized Ionic Liquid Block Copolymers As Solid-State Electrolytes in Alkaline Fuel Cells

Yossef A Elabd

1884The Effect of Brighteners on the Fabrication of Electroplated Bright Aluminum Films Using an $AlCl_3$-Emic-Toluene Bath (2)

Futoshi Matsumoto, Shingo Kaneko, Takao Gunji, Toyokazu Tanabe

1885Multifunctional Carbazole-Based Ionic Liquids

Rajendranath Kirankumar, Po-Yu Chen

1886Electrochromic Devices with Ionic Liquid Based Electrolyte By Room Temperature Process

Haekyoung Kim, So Hee Lee

1887Improvement in Electrochemical Properties of Ionic Liquid PYR_{14}tfsi By Mixing with $BMImBF_4$ As High Safety Electrolyte

Ching-Feng Lee, Chien-Min Chang, Pin-Han Wang, Hwang-Sheng Chen, Yui Whei Chen-Yang

1888The Ionogel of N-Butyl-N-Methylpyrrolidinum Bis(trifluoromethanesulfonyl) Imide and Polyvinylidenefluoride-Co-Hexafluoropropylene for Flexible Lithium Ion Battery

Hwang-Sheng Chen, Chien-Min Chang, Ching-Feng Lee, Pin-Han Wang, Yui Whei Chen-Yang

1889Electrooxidative Polymerization of Aniline in Phosphonium Ionic Liquids and Characterization of the Polyaniline Films

Katsuhiko Tsunashima, Daiki Ito, Masahiko Matsumiya, Yasushi Ono

L07-Renewable Fuels via Artificial Photosynthesis or Electrolysis

Energy Technology/Physical and Analytical Electrochemistry/Sensor

1890(Invited) Photovoltaic Proprieties and Photocatalytic Activity of Perovskite Oxide-Based Systems

Riad Nechache

1891(Invited) Sunlight-Driven Ionic Power Generation from Bipolar Ion-Exchange Membranes Functionalized with Photoacids

William White, Ronald S. Reiter, Claudia P. Ramirez, Christopher D. Sanborn, Shane Ardo

1892Solar Hydrogen Production from Seawater Vapor Electrolysis

Sudesh Kumari, Robert White, Joshua M Spurgeon

1893Insulator-Metal-Insulator-Semiconductor (IMIS) Photoelectrodes for Water Splitting

Daniel Esposito, Natalie Yumiko Labrador, Xinxin Li, Jeffrey Koberstein, Yukun Liu

1894Improving Efficiency and Durability of Dual-Photoelectrode Water-Splitting Devices

Taro Yamada, Hiroshi Nishiyama, Kazunari Domen

1895Highly Fractal MoS_2 Electrodes Modified By Ammonium Thiomolybdate As Efficient Hydrogen Evolving Electro-Catalysts

Alejandra Ramirez-Caro, Frenio A. Redeker, Stefanie Bierwirth, Peter Bogdanoff, Klaus Ellmer, Sebastian Fiechter

1896Solar-to-Hydrogen Efficiency: Shining Light on Photoelectrochemical Device Performance

James L Young, Henning Döscher, John F Geisz, John A Turner, Todd G Deutsch

1897Strategy for the Incorporation of Light Absorbing Catalysts into Photoelectrochemical Devices

Silvan Suter, Sophia Haussener

1898Evaluation of State-of-the-Art Visible-Light-Absorbing Photocatalysts for Use in New Particle Slurry Reactors for Solar Water Splitting

Houman Yaghoubi, William Gaieck, Kevin Tkacz, Ardalan Salehi Fathabadi, Shane Ardo

1899Plasmonic Tungsten Oxide Nanowires for Visible-Light-Enhanced Hydrogen Generation

Can Xue

1900(Invited) Development of Semiconductor Quantum Dots and Their Interfacial Dynamics for Solar Energy Conversion

Yasuhiro Tachibana

1901Development of Solar Fuels Photoanodes through Combinatorial Integration of Ni-La-Co-Ce Oxide and Ni-Fe-Co-Ce Oxide Catalysts on $BiVO_4$

Joel A. Haber, Dan Guevarra, Aniketa Shinde, Lan Zhou, Ian D. Sharp, Francesca M. Toma, John M. Gregoire

1902(Keynote) Bioinspired Photoelectrode Assemblies for Solar Water or CO2 Splitting: At the Crossroads?

Krishnan Rajeshwar

1903(Invited) A-Mn_2O_3 Electrodes for the Oxygen Evolution Reaction - Catalytic Activity As a Function of Electrode Preparation

Sebastian Fiechter, Moritz Kölbach, Andreas Kratzig, Philipp Hillebrand, Alejandra Ramirez-Caro, Klaus Ellmer, Peter Bogdanoff

1904(Invited) In-Situ X-Ray Structural Characterization of Water-Splitting Catalysts in Artificial Photosynthesis

David M Tiede, Gihan Kwon, In Soo Kim, Jonathan D Emery, Alex B. F. Martinson

1905(Invited) Photoelectrochemical Investigation of Ta_3N_5 Films on TCO Substrates Synthesized Via Atomic Layer Deposition for Photocatalytic Water Splitting

Thomas Hamann

1906(Invited) Photoelectrochemical Reduction of CO_2: Electrocatalytic Formation of Solar Fuels

Andrew B. Bocarsly, Emily Cole, Yuan Hu, Jessica Jane Frick, Tao Zhang, James White, James Pander, Maor Baruch, James Park

1907(Invited) Hierarchical Inorganic Assemblies for the Photocatalytic Reduction of CO_2 By H_2o

Heinz Frei

1908(Invited) Stand-Alone Artificial Photosynthesis of Formate from CO_2 and Water Using Copper and Iron Oxide Catalysts

Hyunwoong Park

1909(Invited) On the Selectivity and Durability of Electrocatalysts for the Conversion of CO_2 to Value Added Fuels

Xiao-Dong Zhou, Jingjie Wu

1910Improved Efficiency of Betanin-Sensitized Solar Cells Prepared with Electrophoretically-Deposited Nanoparticulate TiO_2 Photoanodes and Reflective Pt Cathodes

Jesús Israel Valdez-Nava, David Ortega-Díaz, Isabel Virginia Feria-Socarras, Luis Arturo Godínez Mora-Tovar, Rosalba Fuentes, Perla Fabiola Méndez, Juan Manríquez

1911(Invited) Direct Comparison of Molecular and Metal Oxide Catalysts on Hematite for Photoelectrochemical Water Oxidation

Dunwei Wang

1912(Invited) Searching New Materials for Efficient Solar Driven Hydrogen Production

Yanfa Yan

1913(Invited) 2D Nanosheet-Based Hybrid Photocatalysts for Solar Fuel Production

Seong-Ju Hwang

1914(Invited) Multiple Roles of Gold Nanoparticles in Solar-Fuel Photocatalysts

Nianqiang (Nick) Wu, Scott Kevin Cushing, Jiangtian Li

1915(Invited) Chalcogenide Tetrahedral Cluster Based Framework Materials for Photocatalytic Application

Pingyun Feng, Qipu Lin, Koroush Sasan, Xitong Chen, Chengyu Mao

1916(Invited) Photoelectrochemical Systems for Sunlight Driven Fuel Production

Tsutomu Minegishi, Kazunari Domen

1917(Invited) Electrical Models for Fuel Cells

Francisco Fabregat-Santiago, Luca Bertoluzzi, Sixto Gimenez, Juan Bisquert

1918(Invited) Pathway to Developing Highly Efficient and Durable Photelectrochemical Device

Tadashi Ogitsu, Brandon Wood, Tuan Anh Pham, Joel Varley, Woon Ih Choi, Todd G Deutsch, James L. Young, Henning Döscher, John A Turner, Clemens Heske, Monika Blum, Nicolas Gaillard, Thomas F Jaramillo, Chaitanya D. Pemmaraju, David Prendergast

1919(Invited) Numerical Modeling of a Particle-Suspension Reactor for Solar Water Splitting

Rohini Bala Chandran, Sasuke Breen, Yuanxun Shao, Shane Ardo, Adam Z Weber

1920Utilizing Modelling, Experiments, and Statistics for the Analysis of Water-Splitting Photoelectrodes

Yannick Kenneth Gaudy, Sophia Haussener

1921Design Guidelines Based on Thermal Management for Integrated Hydrogen Producing Devices Working with Concentrated Irradiation

Saurabh Tembhurne, Sophia Haussener

1922Electrocatalytic CO_2 Reduction on Nanosized Ag Dendrites Electrodeposited on Indium Doped SnO_2 Electrodes Immersed in Aprotic Medium

Jorge Alberto Banda-Alemán, Selene Sepúlveda, Juan Manríquez

1923Is It Greener? Impact of Cathode Catalyst Performance on Life-Cycle Emissions of Producing Methanol By Electrocatalytic CO_2 Reduction

Matthew Pellow, Sally Benson

1924Enhanced Electrocatalytic CO_2 Reduction on Thiol-Functionalized Gold

Yuxin Fang, Xun Cheng, Ye Xu, John Flake

1925Alternative Catalyst for CO_2 Electrochemical Reduction

Ana Sofia Varela, Wen Ju, Beatriz Roldan, Peter Strasser, Hemma Mistry, Timmey Möller

1926(ECS Toyota Young Investigator Fellowship Program Address) Electrochemical Reduction of $CO_{2(aq)}$ By Solvated Electrons at a Plasma-Liquid Interface

Paul Rumbach, Rui Xu, David B. Go

1927(Invited) CO2 Photoreduction Under Visible Light By Oxygen-Deficient TiO2 with Co-Exposed {001} and {101} Facets

Ying Li, Lianjun Liu, Kesong Yang

1928(Invited) Hybrid Materials for Electrocatalytic and Photoelectrochemical Reduction of Carbon Dioxide: Comparison to Their Activity during Oxygen Reduction

Pawel J Kulesza, Ewelina Seta, Anna Wadas, Ewelina Szaniawska, Renata Solarska, Krzysztof Bienkowski, Iwona Agnieszka Rutkowska

1929(Invited) Unassisted CO_2 Photoconversion at Copper Oxide Electrodes

Narayan Chandra Deb Nath, Seung Yo Choi, Hyunwoong Park, Jae Joon Lee

1930Catalytic Activities of Sulfur Atoms in Amorphous Molybdenum Sulfide (MoS_x) for the Electrochemical Hydrogen Evolution Reaction

Boon Siang Yeo

1931Catalysts for the Electrochemical Conversion of Carbon Dioxide

Joshua Billy, Anne Co

1932CO_2 Electroreduction on Different Mono- and Bi-Metallic Electrocatalysts: Synthesis, Characterization and Electrode Design

Alexey Serov, Jonathan Gordon, Carlo Santoro, Monica Padilla, Kateryna Artyushkova, Olga A Baturina, Sona Kazemi, Tirdad Nickchi, Plamen Atanassov

1933A Differential Electrochemical Mass Spectrometric (DEMS) Study of the Electrocatalytic Reduction of CO_2 on Cu and Au/W Electrode Surfaces

Alnald Javier, Jack Hess Baricuatro, Youn-Geun Kim, Manuel P Soriaga

1934Artificial Photosynthesis: Photocatalytic Fixation of CO_2

Yong Zhou, Congping Wu, Zhigang Zou

1935Electrocatalytic Upgrading of Furfural to Produce Biofuels and Fine Chemicals: Synergistic Effects Between Cu Electrocatalysts and Electrolytes

Sungyup Jung, Elizabeth J Biddinger

1936Controlling the Product Syngas H_2:CO Ratio through Pulsed Bias Electrochemical Reduction of CO_2 on Copper

Bijandra Kumar, Joseph Patrick Brian, Robert White, Sudesh Kumari, Joshua M Spurgeon

1937Carbon Negative CO_2 Conversion with Atomically Precise Nanocatalysts

Douglas R. Kauffman, Christopher Matranga, Jay Thakkar, Rajan Siva, Rongchao Jin

1938Electrochemical CO_2 Reduction: Screening of Material Libraries and Improving Selectivity of Cu By Mixing It with Co

Jan-Philip Grote, Aleksandar R. Zeradjanin, Serhiy Cherevko, Alan Savan, Benjamin Breitbach, Alfred Ludwig, Karl J.J. Mayrhofer

1939Overall Water Splitting By Series-Connected $La_5Ti_2(Cu,Ag)S_5O_7$ Photocathode and $BaTaO_2$ N Photoanode Utilizing Visible Light up to 650nm

Tomohiro Higashi, Yuki Shinohara, Atsushi Ohnishi, Jingyuan Liu, Koichiro Ueda, Shintaro Okamura, Takashi Hisatomi, Masao Katayama, Hiroshi Nishiyama, Taro Yamada, Tsutomu Minegishi, Kazunari Domen

1940Acetaldehyde As an Intermediate in the Electroreduction of Carbon Monoxide to Ethanol on Oxide-Derived Copper

Erlend Bertheussen, Arnau Verdaguer-Casdevall, Davide Ravasio, Joseph H. Montoya, Daniel Bøndergaard, Claudie Roy, Sebastian Meier, Jürgen Wendland, Jens Nørskov, Ifan Erfyl Lester Stephens, Ib Chorkendorff

1941Convenient and Efficient Surface Reforming of $LaTiO_2$ N Photocatalyst: Poly(4-styrenesulfonic acid) Treatment and Microwave Assisted CoO_x Deposition

Seiji Akiyama, Taro Yamada, Kazunari Domen

1942(Invited) Chalcopyrites and III-V Semiconductors for Solar Water Splitting--a Detailed Look at the Electronic and Chemical Surface Structure

Clemens Heske, Monika Blum

1943Scalable Hydrogen Production with a 3D-Printed Membraneless Water Electrolyzer

Glen D O'Neil, Corey D Christian, Jonathan T Davis, David E Brown, Daniel Esposito

1944Electrochemical Deposition of Cu2O Thin Film As Efficient Photocatalyst for Water Splitting Reaction

Maksudul Hasan, Christos K Mavrokefalos, Richard G Compton, James F. Rohan, John S Foord

1945Renewable H_2 Evolution Efficiency and Corrosion Tolerance of 5 Nickel Phosphide Crystalline Phases

Anders B. Laursen, Bin Liu, Edward Izett, Kelly Patraju, Mariana J Whitaker, Maria Retuerto, Tapati Sakar, Nan Yao, Kandalam Ramanusjachary, Martha Greenblatt, G Charles Dismukes

1946Splitting Water from Vapor Feeds: Towards Air-Based Solar-Hydrogen Generators

Miguel A. Modestino, Mohammad H. Hashemi, Daniel Gregory, Christophe Moser, Demetri Psaltis

1947Bipolar Electrodeposition: A Wireless Method for Deposition of Electrocatalysts Onto Semiconducting Particles

William Gaieck, Kevin Tkacz, Houman Yaghoubi, Shane Ardo

1948Efficient Solar Water Splitting Via Tunable Photoanode-Photocathode-Catalyst Interface Devices

Spencer H Porter, Shinjae Hwang, Mengjun Li, Boris Yakshinskiy, Voshadhi Amarasinghe, Elaheh Taghaddos, Anders B. Laursen, Graeme Gardner, Viacheslav Manichev, Ahmad Safari, Eric Garfunkel, Martha Greenblatt, Gerard Charles Dismukes

1949Photo-Electrochemical Hydrogen Sulfide Splitting Using Sn^{IV}-Doped Hematite Photo-Anodes

Franky Esteban Bedoya, Anna Hankin, Geoff H. Kelsall

1950Electrocatalytic Mineralization of Urea in Aqueous Medium By Means of Ni(II)Cyclam-Modified Nanoparticulate TiO_2 Anodes and Simultaneous Electrogeneration of H_2 on Pt Cathodes

Saacnhitee Murcio-Hernández, Catalina Gonzalez Nava, J. J. Perez, Julieta Torres-González, Selene Sepúlveda, Luis Arturo Godínez Mora-Tovar, Francisco Javier Rodriguez Valadez, Adrián Rodríguez-García, Juan Manríquez

M01-Sensors, Actuators, and Microsystems General Session

Sensor

1951Optimization of a Suspended, Hot Micro-Structure for Better Energy Efficiency and Improved Performance

Alireza Mahdavifar, Milad Navaei, Peter Hesketh

1952Investigation of Silver Catalytic Properties on Reduced Graphene Oxide to Enhance Gas Sensitivity and Selectivity from Mixed VOC Gases

Eunji Lee, Dong-Joo Kim

1953Development and Testing of an Electrochemical Methane Sensor

Praveen K. Sekhar, Eric L. Brosha, Cortney R Kreller, Jesse Kysar

1954Ultralow Power Gas Sensing for Societal Well-Being

Michael T Carter, Joseph R Stetter, Melvin W Findlay, Bennett J. Meulendyk, David Peaslee

1955Response Characteristics of a Pre-Commercial Mixed Potential Ammonia Sensor in Diesel Engine Exhaust

Cortney R Kreller, Vitaly Y Prikhodko, Josh A Pihl, Scott Curran, Rangachary Mukundan, James E Parks, Eric L. Brosha

1956Ultra-Low NO_2 Detection By Gamma WO_3 Synthesized By Reactive Spray Deposition Technology

Rishabh Jain, Yu Lei, Radenka Maric

1957Electrochemical Response of Nitrite and Nitric Oxide on Graphene Oxide Nanoparticles Doped with Prussian Blue (PB) and Fe_2O_3 Nanoparticles

Abolanle Saheed Adekunle, S. Lebogang, P. Lorato Gwala, Tsele T. Palesa, Olasunkanmi Lukman O., Omolola E. Fayemi, Diseko Boikanyo, Ntsoaki Mphuthi, John A.O. Oyekunle, Aderemi O. Ogunfowokan, Eno E. Ebenso

1958Hierarchically Structured Zinc Oxide Gas Sensors with Silver Catalyst

Yoonsung Chung, Hyejin Park, Eunji Lee, Dong-Joo Kim

1959Highly Sensitive and Selective Gas Sensors Based on Oxide Nanomaterials for Electronic Nose

Young-Seok Shim

1960Possible Use of Yttria-Stabilized Zirconia for Potentiometric Sensors at Room Temperature

Alex Laurence Szendrei, Anil V. Virkar, Taylor Sparks

1961Uniform Porous Multilayer-Junction Thin Film for Enhanced Gas-Sensing Performance

Xuhui Sun, Pingping Zhang, Hui Zhang

1962(Keynote) Wearable Electrochemical Sensors

Joseph Wang

1963(Keynote) Detecting Small Molecule-Membrane Protein Binding Kinetics

Nongjian Tao

1964Development of All Solid State Sensors for Environmental Water Monitoring: Dissolved Oxygen and Free Chlorine

HuanHsuan Hsu, Ravi Selvaganapathy

1965Metallophthalocyanine Based Conducting Electroactive Electropolymers and Their Applications As Electrochemical Pesticide Sensors

Atif Koca, Ali Riza Ozkaya, Ümit Ergin Özen, Zekeriya Biyiklioglu

1966(Invited) Triboelectric Nanogenerators for Self-Powering Small Electronics

Sang-Woo Kim

1967(Invited) Chip Based Electrochemical Imaging of Neuron Transmitters Expression at Single PC12 Cell and 3-D Spheroids Level

Chen Zhong Li, Pratikkumar Shah, Kosuke Ino, Tomokazu Matsue, Qiaoli Yue, Chunying Chen

1968(Invited) Simple Microfluidic Sample Preparation for Point of Care Diagnostics

Ravi Selvaganapathy, Jun Yang, Sondos Ayyash

1969Paper-Based Test Strips for Detection of Nucleic Acids and Heavy Metals

Xuefei Gao, Nianqiang (Nick) Wu

1970Electrochemical Detection of Bacteria Using Portable Paper-Based Culture Devices

Frédérique Deiss, Armelle Metangmo

1971A Paper-Based Electrochemical Sensor Array for Detection of Hydrogen Peroxide

Hamed Shamkhalichenar, Jin-Woo Choi

1972Efficient Capture of Particles Via Rotating Magnetic Beads in a Microfluidic Channel

Drew Owen, Matt Ballard, Alexander Alexeev, Peter Hesketh

1973DNA Electrochemical Hybridization Detection in Droplets Using Gold Ultramicroelectrodes in a Two-Electrode Configuration

Marie-Charlotte Horny, Mathieu Lazerges, Jean-Michel Siaugue, Antoine Pallandre, Anne-Marie Haghiri-Gosnet, Jean Gamby

1974An LED-Based Fluorescent Sensing System for on-Site Microalgal Detection

Young-Ho Shin, Jonathan Z. Barnett, Maria T. Gutierrez-Wing, Kelly A. Rusch, Jin-Woo Choi

1975A Laminar-Flow Based Microfluidic Microbial Three-Electrode Cell for Biosensing

Bin Yang, Feifang Li, Xingwang Zhang, Zhongjian Li

1976Real-Time Monitoring of Superoxide Anion Radical and Hydrogen Peroxide Generation in Higher Plantsin Response to Wounding: In-Vivo Electrochemical Study

A. Prasad, A. Takahashi, R. Fujii, R. Matsuoka, H. Kikuchi, S. Aoyagi, T. Aikawa, T. Kondo, M. Yuasa, M. Tada, M. Kobayashi, P. Pospí□il, S. Kasai

1977Rapid Detection of Pathogens By a 3D Biomolecular Filter and Automated Biosensor Measurement System for Liquid

Songtao Du, Shin Horikawa, Yuzhe Liu, Yating Chai, Jiajia Hu, Bryan A Chin

1978Evaluation of Kinetic and Thermodynamic Parameters of Rizatriptan Reduction Using Novel Nanobiosensor

Saemeh Mohammadi Deylamani, Akbar Islamnezhad

1979Electrochemical Dissolution of a Microneedle System for Controlled Drug Release in Smart Devices

Ashleigh Anderson, James Davis

1980Detection of Cortisol in Pbs Buffer and Fish Blood Plasma By Electrochemical Impedance Spectroscopy

Madhavi L Pali, Ian Ivar Suni

1981 Monitoring of Nitric Oxide Levels Released from NOS-Loaded Liposomes in Proximity of Cystic Fibrosis Cell Line Models

Mekki Bayachou, Tiyash Bose, Tericka Henderson

1982 Rapid Detection of Live Versus Dead Bacteria

Shin Horikawa, Yuzhe Liu, Songtao Du, I-Hsuan Chen, Howard Clyde Wikle, Bryan A. Chin

1983 All-Solution-Processed Wrinkled Gold Nanoparticles As Sensors

Christine Gabardo, Jie Yang, Nathaniel Smith, Chris Adams-McGavin, Leyla Soleymani

1984 High Frequency Sensing with Enhanced Sensitivity in Graphene Nanogrid FET Immunosensor

Joyeeta Basu, Chirasree Roychaudhuri

1985 Detection of Volatile Plant Chemicals Using Novel Enzymatic Electrochemical Biosensor

Yi Fang, Ramaraja P. Ramasamy

1986 A Versatile Bioanode with Improved Current Density and the Coulombic Efficiency through a Cascade Reaction

Muhammad Nadeem Zafar, Iqra Aslam, Shahzad Murtaza, Lo Gorton

1987 Towards a Ni-P 3D Electrostatic Energy Harvesting MEMS for Medical Implants

Sarah Risquez, Marion Woytasik, Huijuan Cai, Johan Moulin, Elie Lefeuvre

1988 Synthesis and Characterization of Gold Nanostructures and Their Activity Against Dopamine

Juan Francisco Silva, Sara Ramirez, Nataly Silva, Maria Paz Oyarzun, Jorge Pavez

1989Double-Layer Planar Coil Detector for Improved Detection of Salmonella on Food Contact Surfaces

Yuzhe Liu, Songtao Du, Shin Horikawa, Howard Clyde Wikle, Jiajia Hu, Fengen Wang, Bryan A. Chin

1990Electron Transfer Studies Between New Fad-Dependent Glucose Dehydrogenase and Different Osmium Polymers (Applications in biosensors and biofuel cells)

Iqra Aslam, Muhammad Nadeem Zafar, Roland Ludwig, Dónal Leech, Lo Gorton

1991Ethanol Gas Sensing Behavior of ZnO Nanorods Decorated with Various Metal Catalysts

Hyejin Park, Eunji Lee, Yoonsung Chung, Dong-Joo Kim

1992The Investigation of Ti Doped Zinc Oxide Sensing Membrane in Bio-Sensor Applications

Yen Lin Su

1993Trace Determination of Acesulfame-K Using Voltammetric Nanosensor and Evaluation of Kinetic Parameters

Samaneh Hajimosaei, Akbar Islamnezhad

1994Comparative Electroanalytical Study on Fabrication of CN Selective Sensor Based on Polymeric Membrane Electrode and Coated Graphite Electrode

Ashok KUMAR Singh, Shubhrajyotsna Bhardwaj

1995Modification of BDD Electrodes By Organic Films Towards Detection of Selected Nucleobases Nucleosides and Nucleotides

Pawel Niedzialkowski, Robert Bogdanowicz, Patrycja Zieba, Jacek Ryl, Michal Sobaszek, Mateusz Smietana, Tadeusz Ossowski

1996Micro Device for Bio-Particle Positioning in a Confined Microfluidic Volume Using Carbon MEMS and Dielectrophoretic Forces

Oscar Pilloni, José Luis Benítez, Laura Oropeza-Ramos

1997Nanostructured Sensors for Biomedical Diagnosis and Environmental Monitoring

Xuefei Gao, Nianqiang Wu

1998Highly Sensitive and Simultaneous Determination of Hydroquinone and Catechol at an Optimized Activated Glassy Carbon Electrode

A J Saleh Ahammad, Md. Aman Ullah, M. Mominul Hoque, Tania Akter, Abdullah Al Mamun

1999Construction of Non-Enzymatic Hydrogen Peroxide Sensors By Exploiting the High Electrocatalytic Activity of Pd-Ag/Rgo Nanocomposites

Aytekin Uzunoglu, Siyi Song, Lia Stanciu

2000Development and Characterization of Fuel Cell Sensor for Potential Transdermal Ethanol Sensing

Ahmed Hasnain Jalal, Yogeswaran Umasankar, Shekhar Bhansali

2001Development and Applications of Carbon-Based Solid-State Potentiometric Sensors

J Ganesh Ummadi, Vrushali S Joshi, Dipankar Koley

2002Qualification and Quantification Analyses of Iron (III) Ions in a Variety of Samples, Using Nano-Structured Metal-Oxide Based Electrochemical Sensors

Maryam Hariri, Sylvie Morin

2003Electrodeposition of Dendritic Ni-Co Onto High-Voltage Electrodes of Electrostatic Particulate Matter (PM) Sensors

Katherine Copenhaver, Klaus Allmendinger, Michael Beckert, Michael Boettcher, Joseph Fitzpatrick, Brett Henderson, Jason Nadler, Leta Woo

2004Smart Patch Systems: Iontophoretic Microheater Assemblies for Controlled Transdermal Delivery

Aaron McConville, James Davis

2005Voltammetric Reduction of Graphene Oxide and Spectroelectrochemical Characterization

Pablo Fanjul Bolado, David Hernández Santos, Carla Navarro Hernandez, Maria Begoña González García, Alvaro Colina, Mª Aranzazu Heras

2006Sealing Method of Thermoplastics Mediated By Surface Chemical Modification

Nae Yoon Lee

2007Sn-SnO_2 Core-Shell Nanostructuresgrowth Mechanism and Their Thermal Properties

Chiu-yen Wang, Sin-An Chen, Li-Jen Chou, Lih-Juann Chen

2008Integrated-Evanescent Raman Sensors Based on Titanium-Dioxide Nanophotonics

Christopher C. Evans, Chengyu Liu, Jin Suntivich

2009Effect of N^+ Layer Deposition Power on Light Sensing of Amorphous Silicon pin Diodes

Kai Henry, Yue Kuo

M02-Medical and Point-of-Care Sensors

Sensor

2010(Invited) Glimmers of New Point-of-Care Sensors through the Patent Thicket

David Dean Cunningham, Connor T. Smith, Courtney N. Miller

2011Novel Materials-Based Stretchable and Self-Healing Electrochemical Sensors for Wearable Applications

Amay Bandodkar, Joseph Wang

2012Point-of-Care Screening Tools for Cancer

Raluca-Ioana Stefan-van Staden

2013Development of a Genosensor for Sickle Cell Anemia Trait Determination

Bruno Campos Janegitz, Laís Canniatti Brazaca, Camila Barbosa Bramorski, Juliana Cancino-Bernardi, Valtencir Zucolotto

2014Fe_3O_4 on Graphene Oxide Nanosheets for Electrochemiocal Detection of Cancer Biomarker Proteins

Mohamed Sharafeldin, Gregory William Bishop, Snehasis Bhakta, James F Rusling

2015Sensitive Detection of Platelet-Derived Growth Factor Using a Multi-Parametric/Multimodal Spectroscopy Apparatus

Lang Zhou, Mary A Arugula, Aleksandr Simonian

2016Development of a Label-Free Electrochemical Immunosensor for the Detection of Prostate Cancer

Sean Rawlinson, Prosper Kanyong, James McLaughlin, James Davis

2017Simple Design Disposable Non-Enzymatic Glucose Sensor Based on Flexible Ni/PET Electrode

Alireza Molazemhosseini, Pasquale Vena, Luca Magagnin

2018A Universal Surface for Label-Free Electrical and Optical Sensing of Disease Markers

Meng-Yen Tsai, Alexey Tarasov, Darren W Gray, Niall Shields, Niamh Creedon, Armelle Montrose, Erin M Flynn, Corey A Joiner, Robert Taylor, Pierre Lovera, Alan O' Riordan, Mark H Mooney, Eric M Vogel

2019Fabrication and In Vivo Evaluation of Low-Invasive Patch Type Glucose Sensors

Mikito Yasuzawa, Jiang Li, Yusuke Fuchiwaki

2020Development of an Electronic Skin Wafer for the Minimization of Peristomal Irritant Dermatitis

Anna McLister, Karl McCreadie, James Davis

2021Biofouling-Resilient Nanoporous Gold Electrochemical Sensors for DNA Detection

Pallavi Daggumati, Zimple Matharu, Ling Wang, Erkin Seker

2022Fabrication of Smart Au/TiO_2 Nanotubes/Si Based Schottky-Tunneling Diode Sensors for Electrochemical Detection of Biomarkers

Dhiman Bhattacharyya, Mano Misra, Swomitra K. Mohanty

2023Carbon Nanofiber Nanoelectrodes for Neural Stimulation and Chemical Detection: The Era of "Smart" Deep Brain Stimulation

Jessica E. Koehne, Michael Marsh, Kevin E Bennet, Russell Andrews, Kendall H Lee, M. Meyyappan

2024Construction of Disposable Carbon-Based Electrochemical Cells By Using Electronic Craft Cutter for Sensor and Biosensor Applications

André Santiago Afonso, Carolina Venturini Uliana, Ronaldo Censi Faria

2025Development of Peptide Functionalized Smart Bandages for Real-Time Wound Diagnostics

Anna McLister, Jill Cundell, Dewar Finlay, James Davis

2026Temperature-Responsive PNIPAM-Grafted-Alginate Core Wrapped with LbL Assembled Chitosan/DNA Membranes for Development of Controlled Drug Release System

Yuanyuan Zhang, Mary A Arugula, Aleksandr Simonian

2027Ruthenium-Modified Sensitive NO Sensors: Quantifying Nitric Oxide in the Pathobiology of Cystic Fibrosis

Tiyash Bose, Mekki Bayachou

Z01-General Society Student Poster Session

All Divisions

2028Etching Studies of BCN Thin Films

Adithya Prakash, Kalpathy B Sundaram

2029Organic Thin-Film Transistors Based on Asymmetric Chrysene Derivatives

Shuhei Murata, HIroyuki Otsuki, Kazuo Okamoto, Yoshihito Kunugi

2030Pore-Effective Ion Diffusion of Polymer Gel Electrolytes in Sub-Micrometer Porous Electrode

Su-Jin Ha, Jun Hyuk Moon

2031Impedancemetric NO_x Sensors Based on $La_{0.8}Sr_{0.2}MnO_3$ and Au Electrodes

Nabamita Pal, Erica P Murray

2032Electrodeposition of Al-W Alloy Films from Ionic Liquid and Evaluation of Their Corrosion Resistance and Mechanical Properties

Shota Higashino, Ayumu Takahashi, Masao Miyake, Ryuta Kasada, Tetsuji Hirato

2033Effect of Ambient Conditions on Ionic-Liquid-Electrolyte Aluminium-Air Batteries

2041 Durability Study of Intermediate Temperature-Solid Oxide Fuel Cells with Excellent Cathode Materials

Ja-Yoon Yang, Jun-Young Park

2042 Modification of Carbon Electrodes with Electrochemically-Formed Dendrimer-Encapsulated Palladium Nanoparticles from Tributylmethylammonium Bis((trifluoromethyl)Sulfonyl)Imide Ionic Liquid

Nai-Chang Lo, Po-Yu Chen, I-Wen Sun

2043 Rietveld Relaxation Analysis on $Li_xNi_{0.5}Mn_{1.5}O_4$ (x = 0.1, 0.2) 5V Cathode Material

Keisuke Yamada, Shigeomi Takai, Takeshi Yabutsuka, Takeshi Yao

2044 Defect-Free Amorphous Indium Gallium Zinc Oxide Deposition Process By Magnetic Field Shielded Sputtering

Dong Hyeok Lee, KyungDuck Kim, MunPyo Hong

2045 Corrosion of Carbon Steel Wire Roads Containing Various Sulfur Content in Sour Solutions

Su-Won Kim, Chan-Jin Park

2046 Investigation of the Corrosion of Stainless Steels Used for Reverse Osmosis Desalination Plant By Varying Chemicals and Flow Velocity

Young-Jae Kim, Chan-Jin Park

2047 Comparison of Physical and Electrical Characteristics of Memory Devices with NiO_2 Charge Trapping Layer

Rama Krushna Mahanty, Chyuan Haur Kao, Chun-Fu Lin, Yen Lin Su

2048 Directed Functionalization of Aromatic C-H Bonds in Electrocatalytic Phosphorylation and Fluoroalkylation Reactions with the Participant of Transition Metal Complexes

Sofia Strekalova, Mikhail Khrizanforov, Tatyana Gryaznova, Yulia Budnikova

2049 Nano Sized Defect Free Al_2O^3 Thin Film for High Performance Gas Barrier

YunSung Jang, MunPyo Hong

2050 Tetracyanoborate Anion Based Phosphonium Ionic Liquids As Electrolytes for Pyrrole Electropolymerization

Keiichi Nishihata, Katsuhiko Tsunashima, Masahiko Matsumiya, Yasushi Ono

2051 In Situ Raman Studies on Electrochemically Deposited Manganese Oxide on Gold

Zoran Miroslav Pavlovic, Chinmoy Ranjan, Qiang Gao, Robert Schloegl

2052 Quantification of Phase Evolution in Praseodymium Nickelates

Emir Dogdibegovic, Christopher J. Wright, Xiao-Dong Zhou

2053 The Performance of Hard Carbon in a Sodium Ion Battery and Influence of the Sodium Metal in Observed Properties

Daniela Ledwoch, Daniel J.L Brett, Emma Kendrick

2054 Redox Cycling Behavior of Catecholamines and Their Mixtures at Different Diffusion Distances: Steps Toward Quantitative Speciation

Mahsa Lotfi Marchoubeh, Mengjia Hu, Ingrid Fritsch

2055 Signal Amplification of a Universal Four-Way Junction Based Nucleic Acid Sensor through Modification of Electrochemical Technique Parameters

Dawn M Mills, Karin Y. Chumbimuni-Torres

2056 Effect of Al_2O_3 Addition in Partially-Stabilized Zirconia Based NO_x Sensors

Khawlah MS Kharashi, Erica P Murray

2057Predicting the Formation of Electrodeposition Patterns Caused By Interfacial Instabilities

Chun-Chieh Wang, Kirk J Ziegler, Ranga Narayanan

2058Reverse Microemulsion Vs Ultrasound-Assisted Synthesis of PtCu/MWCNT Towards Oxygen Reduction Reaction with Possible Application in Fuel Cells

Yazmin Yorely Rivera-Lugo, Rosa María Félix-Navarro, Edgar Alonso Reynoso-Soto

2059Nanoparticle-Polymer Surface Adsorption Relevant to CMP Applications

Richard A Wienck, Jason J Keleher

2060Synthesis of Photocatalytic Nanocomposite Biomaterials for Enhanced Water Filtration Application

Jacob Murray, Elizabeth Senese, Jeromy J Rech, Jason J Keleher

2061Electrochemical Determination of Aluminium By Oxidation of Dopamine Using Platinum Nanoparticles on MWCNT As Sensor

Rosa María Félix-Navarro, Karelid García-Tapia, Edgar Alonso Reynoso-Soto, Carolina Silva-Carrillo, Shui Wai Lin-Ho, Francisco Paraguay-Delgado

2062Aqueous Co-Electropolymerization of Thieno[3,4-b]-1,4-Dioxin-2-Methanol and a Synthesized Derivative

Benjamin J. Jones, Ingrid Fritsch

2063UCSD ECS Student Chapter: A Burgeoning Local Community in San Diego

Pritesh Parikh, Haodong Liu, Judith Alvarado, Han Nguyen, Ying Shirley Meng

2064Materials Study for Optimization of Redox-Magnetohydrodynamics (R-MHD) for Pumping in Microfluidics Systems

Foysal Z Khan, Ingrid Fritsch

2065Synthesis and Characterization of Functionalized CdS-QD Polymeric Nanocomposite Film to Mitigate Laser Attacks on Commercial Aircrafts

Samantha J. Brain, Michelle Zaleski, James Hofmann, David Santefort, Joesph Kozminski, Charles Crowder, Jason J Keleher

2066Probing the Role of Organic Additives on the Film Formation Mechanism Relevant to Metal CMP

Amy Mlynarski, Lisa M. Janes, Jason J Keleher

2067Electrochemical Study of Platinum-Ruthenium-Copper Trimetallic Nanostructures for Methanol Oxidation

Leanne Mathurin, Jingyi Chen

2068Acid Mine Drainage (AMD) Treatment with Sludge from Wastewater Treatment Plant in a Two-Chamber Microbial Fuel Cell

Meisam Peiravi, Jia Liu

2069The Effect of Catalyst Layer Deposition Thickness on DMFC Performance Via the Drawdown Method

Dean Glass, G. K. Surya Prakash, George A Olah

2070Proposal for Deposition Mechanism of Electrochemical-Constructed IrO_2-Ta_2O_5|Ti Electrodes

Rosa Alhelí Herrada, Erika Bustos

2071Deposition and Electrical Characterization of $CaCu_3Ti_4O_{12}$ Thin Films

Giji Skaria, Kalpathy B Sundaram

2072Electrochemical Studies of Nickel/H_2SO_4 Oscillating Systems and the Preparation and Testing of Copper Coupled Microelectrode Array Sensors

David Q. Clark, David O Wipf

2073 Template Fe-Ni-Co Nanowire Electrodeposition with H_2 Evolving Side Reactions

Deyang Li, Elizabeth J Podlaha

2074 Optimization of Zinc Sensing Membranes to be Used in Ion-Selective Electrodes for the Determination of Zinc Ion Concentration for Agricultural Applications

Wynstona Louis, Courtney Hulce, Swadeshmukul Santra, Karin Y. Chumbimuni-Torres

2075 Electrochemical Paper-Based Platform for Micronutrient Sensing: Potassium Detection

Isaac Andrew Taylor, Frederique T Deiss

2076 Nanostructured Graphene-Supported Pt-$NiTiO_3$ Catalyst for the Oxygen Reduction Reaction for Alkaline Direct Alcohol Fuel Cells Applications

Anayantzin Hernández Ramírez, F.J. Rodriguez-Varela, Ma. Esther Sánchez-Castro, Aruna Kalasapurayil Kunhiraman, Palanisamy Karthikeyan, Ramasamy Manoharan

2077 The Analysis of Prussian Blue Bonding on the Electrochemically Functionalized Carbon Nanotubes

Lisa Je, Stuart Belli, Thomas J. O'Connor

2078 Leveraging Local pH Gradients to Optimize Electrochemical Lanthanum Accumulation

Adan Medina, Jerome T. Babauta, Haluk Beyenal

2079 Towards a Solid Oxide Fuel Cell/Electrolysis Cell Fabricated Entirely By Microwave Methods

Beatriz Molero-Sánchez, Paul Kwesi Addo, Viola Birss, Emilio Morán

2080 A Pulse Voltage Application in Electrochemical Reduction of Solid $CaWO_4$ Powder

2089Improve Productivity through Reducing MBT Application Time Using Multi Bad Block Management DFT

Hyun Sung, Young Ik Eom

2090Preparation of Ptpb/TiO_2/Cup-Stacked Carbon Nanotube Composite for Enhancement of Electrocatalytic Reaction of Oxygen Reduction Reaction

Fuma Ando, Takao Gunji, Toyokazu Tanabe, Shingo Kaneko, Tsuyoshi Takeda, Futoshi Matsumoto

2091Synthesis of High Purity Layered Structure Sn_3O_4 and Its Photocatalytic Performance for Hydrogen Evolution Reaction Under Visible-Light Irradiation

Masanari Hashimoto, Toyokazu Tanabe, Takao Gunji, Shingo Kaneko, Hideki Abe, Futoshi Matsumoto

Z02-Nanotechnology General Session featuring Nanoscale Luminescent Materials 4

All Divisions/Interdisciplinary Science and Technology Subcommittee

2092(Invited) Silicon Nanostructures: A Versatile Material for Photonics

Zahra Bisadi, Chiara Piotto, Giorgio Fontana, Marina Scarpa, Lorenzo Pavesi, Paolo Bettotti

2093(Invited) Linear and Nonlinear Optical Properties of Individual Silicon Nanowires

Peter Wiecha, Arnaud Arbouet, Christian Girard, Thierry Baron, Aurélie Lecestre, Guilhem Larrieu, Vincent Paillard

2094(Invited) Silicon Nanocrystals: Size Control, Basic Understanding and High Quantum Yields

Sebastian Gutsch, Jan Laube, Anastasia Zelenina, Daniel Hiller, Margit Zacharias

2095(Invited) Silicon Quantum Dots: From Single-Dot Studies to Highly Luminescent Ensembles

Jan Linnros

2096Si/SiGe Interfaces in Three-, Two-, and One-Dimensional Nanostructures and Their Influence on SiGe Light Emission

David J Lockwood, Xiaohua Wu, Jean-Marc Baribeau, Selina A. Mala, Xiaolu Wang, Leonid Tsybeskov

2097Improvement of Quantum Efficiency of the Nanosized Phosphors Using a Flux

Jungmin Ha, Zhenbin Wang, Ekaterina Novitskaya, Gustavo Hirata, Olivia A Graeve, Shyue Ping Ong, Joanna McKittrick

2098Magneto-Photoluminescence and Giant Magneto-Resistance in Self-Assembled Vertically-Aligned $(ZnO)_{0.5}$:$(La_{0.7}Sr_{0.3}MnO_3)_{0.5}$ Nanopillars

Wei Pan

2099(Invited) Nanophotonic Designs for Luminescent Quantum Dots and Application to Photovoltaics

Vivian E. Ferry

2100(Invited) Light Management in Efficient Luminescent Si-Based Layers for Photovoltaic Applications

Lucile Dumont, Florian Ehre, Nicolas Guth, Julien Cardin, Christophe Labbe, Christian Dufour, Fabrice Gourbilleau

2101Investigation of Conducting Ni-Co Spinel Oxide Thin Film for Solar or Photoelectrochemical Cell Applications

Shu-Yi Tsai, Kuan-Zong Fung, Chung-Ta Ni

2102Creation of High-Density Nanostructures for Use in Energy Conversion Applications

Justin C. Wong, Cheng Xu, Kirk J Ziegler

2103(Invited) Adventures in Si Nanocrystal Surface Chemistry....Controlling Optical Properties and so Much More

Jonathan Veinot

2104(Invited) Silicon-Based Nano-Composites Made from All-Inorganic Colloidal Silicon Nanocrystals

Minoru Fujii

2105Synthesis of Nano-Phosphor By Water Assisted Room Temperature Solid State Reaction (WASSR) Method

Kenji Toda, Takuya Hasegawa, Tatsuro Kaneko, Ayano Toda, Sun Woog Kim, Kazuyoshi Uematsu, Tadashi Ishigaki, Junko Koide, Masako Toda, Yoshiaki Kudo

2106(Invited) All-Optical Measurement of Quantum Efficiency in Luminescent Materials and Its Application to Silicon Nanocrystals

Iain F Crowe, Matthew P Halsall, Russell M Gwilliam

2107(Invited) XAFS of Rare Earth Elements in Amorphous Silicon Alloys: What Do We Know about the Local Structure?

Leandro R. Tessler, Giacomo Ferreira Bosco

2108(Invited) Luminescent Rare-Earth Doped Thin Film Nanostructures As Building Blocks for Nanophotonic and Lighting Applications

Ivan Camps, Antonio Mariscal, Rosalia Serna

2109Size-Controlled Synthesis of Near-IR-Light-Emitting $AgInTe_2$ Nanocrystals for Biological Imaging

Tatsuya Kameyama, Yujiro Ishigami, Susumu Kuwabata, Tsukasa Torimoto

2110(Invited) GaAs Quantum Dots in Gap Nanowires: Growth and Luminescence

Ray R LaPierre, Paul Kuyanov, Jonathan Boulanger

2111(Invited) Upconverting Fluoride Nanocrystals - Synthesis and Optical Properties

Agnieszka Noculak, Artur Podhorodecki

2112(Invited) Plasmonic Hot Carrier Injection in Wide Bandgap Nitride Semiconductors

Prineha Narang

2113(Invited) High Efficiency, Color-Tunable InGaN/GaN Nanowire Light Emitting Diode Arrays

Renjie Wang, Yong-Ho Ra, Zetian Mi

2114(Invited) on-Chip and Silicon-Compatible Er-Doped Aluminum Oxide Lasers

Jonathan D. B. Bradley, Purnawirman Purnawirman, Ehsan Shah Hosseini, Zhan Su, E. Salih Magden, Nanxi Li, Gurpreet Singh, Jie Sun, Thomas N. Adam, Gerald Leake, Douglas Coolbaugh, Michael R. Watts

2115Material Conversion of GaAs Nanowires

Kohei Nishioka, Fumitaro Ishikawa

2116Effects of N Incorporation on Carrier Recombination in GaAs-Based Nanowires Grown By Molecular Beam Epitaxy on Si Substrates

Shula Chen, Weimin M Chen, Fumitaro Ishikawa, Irina A Buyanova

2117Spin-Polarized Light Emitting Self-Assembled InAs/GaAs Quantum-Dot Molecular Structures: The Dominant Mechanism for Spin Loss during Spin Injection

Y Q Huang, Y Puttisong, Irina A Buyanova, Weimin M Chen

2118Crystallization of Silicon Thin Films By Microwave-Induced Rapid Heating

Shunsuke Kimura, Kosuke Ota, Masahiko Hasumi, Ayuta Suzuki, Mitsuru Ushijima, Toshiyuki Sameshima

2119 Calibration of a Circular HV Magnetron Sputtering Source for in-Situ RE Doping of Ecr-PECVD Si-Based Thin Films

Jeremy William Miller, Jacek Wojcik, Jonathan D. B. Bradley, Peter Mascher

2120 Impact of Conjugated Mechanical and Electrical Stimuli on Interfacial Adhesion and Electrical Contact

Vishal Zade, Ashlie Martini, Min Hwan Lee

2121 Reversible Magnetization Modulation in Ordered Mesoporous Mixed Metal Oxide Thin Films By Double Layer Charging and Topotactic Lithium Insertion

Christian Reitz, Torsten Brezesinski

2122 Controlling ZnO Nanosheet Morphology By Galvanostatic Electrodeposition

Gerald Ensang Timuda, Keiko Waki

2123 High Aspect-Ratio WO_3 Nanostructures Grown By Self-Organizing Anodization in Hot Pure O-H_3PO_4

Marco Altomare, Nhat Truong Nguyen, P. Schmuki

2124 The Promotion of the Methanol Electrooxidation Performance of Pt/CNTs By Lanthanide Oxides

Haibin Chu

2125 Fabrication and Characterization of Tungsten Oxide Nanostructures Using Thermal Evaporation

Po-Heng Sung, Kuo-Chang Lu

2126Integrated All Solid Micro-Supercapacitors Based on Bottom-up Silicon Nanostructures: From Nanomaterials to Cutting-Edge on-Chip Devices

Dorian Gaboriau, Mylène Brachet, David Aradilla, Gérard Bidan, Jean Le Bideau, Thierry Brousse, Pascal Gentile, Said Sadki

2127Modulation of Fluorescence Biomolecule Signals By Semiconducting Nanowire Antanna Effects

Rune Frederiksen

2128Tuning the Morphology of Te 1D Nanostructures By Template-Free Electrochemical Deposition in an Ionic Liquid

Laura Thiebaud, Sophie Legeai, Jaafar Ghanbaja, Nicolas Stein

2129Silicon Nanowire Arrays for High Capacitance Electrodes in Room Temperature Ionic Liquid Electrolyte

Abdurrahman Shougee, Foivia Konstantinou, Tim Albrecht, Kristel Fobelets

2130In Situ Liquid-Cell Transmission Electron Microscopy Investigation of Nickel Electrodeposition

Yuxuan Wang, Zhe-Fei Li, Dan Wang, Gerardine G Botte

Z03-Grand Challenges in Energy Conversion and Storage

Electrodeposition/Energy Technology/High Temperature Materials/Industrial Electrochemistry and Electrochemical Engineering/Physical and Analytical Electrochemistry

2131Liquid-like Hydrogen in the Ultra-Micropores of Commercial Activated Carbons

Raffaele Giuseppe Agostino, Francesco Demetrio Minuto, Alfredo Aloise, Alfonso Policicchio

2132Anodically Grown TiO_2 Nanotube Arrays Used As Substrates for Thermal Dewetting of Pt Show Significantly Enhanced Photocatalytic H_2 Generation with Minimal Co-Catalyst Amounts

Nhat Truong Nguyen, Marco Altomare, Patrik Schmuki

2133The Detection of Solution PHASE Superoxide As a Reaction Intermediate of Oxygen Reduction in Neutral Aqueous Solutions

Zhange Feng, Daniel Scherson

2134Hydrogen Production from Water Based on Heterogeneous Photocatalysts

Taro Yamada, Kazunari Domen

2135Mechanistic Study of Hydrogen Production By Aqueous Phase Reforming of Ethanol and Acetic Acid over Various Supported Ru Catalysts

Shuichi Naito, Toshiaki Nozawa, Shiro Hikichi

2136Self-Terminated Electrodeposition Reactions for Electrocatalysis

Thomas P. Moffat, Yihua Liu, Sang Hyun Ahn, Rongyue Wang, Nicole L. Ritzert, Kathleen Schwarz, Dincer Gokcen, Carlos Hangarter, Ugo Bertocci

2137Novel Components for PEM Electrolysis: Status and Challenges

Aldo Saul Gago, Philipp Lettenmeier, Li Wang, Svenja Kolb, Fabian Burggraf, K. Andreas Friedrich

2138Gas-Transport Resistances in Fuel-Cell Catalyst Layers

Tobias Schuler, Michael C Tucker, Adam Z Weber

2139Renewable Hydrogen: Near Term Solutions and Long Term Potential

Katherine E Ayers

2140100k Cycles and Beyond: Extraordinary Stability for Au@MnO_2 core@Shell nanowires Imparted By Gel Electrolyte

Mya Le Thai, R. M. Penner, Girija Thesma Chandran

2141 Epitaxial Thin-Film Approach to Fundamental Studies and Modeling of Cathodes and Solid Electrolytes of Li-Ion and Other Batteries

Leonid A. Bendersky

2142 (Energy Technology Division Research Award) Electrolytes in Advanced Electrochemical Systems for Energy Storage and Conversion

Thomas A. Zawodzinski

2143 High-Energy-Density, Long-Life Lithium-Sulfur Batteries

Arumugam Manthiram

2144 Grand Challenge: Attaining the Limits of Intercalation Reactions

M. Stanley Whittingham

2145 Overcoming Additives and Optimizing Cationic Substitution for Enhanced Supercapacitor Performance

Richard Robinson

2146 Molten Sulfides: From Thermoelectricity to Electrochemical Extraction

Antoine Allanore

2147 Development of Practical Sodium-Ion Batteries Using Amide Ionic Liquids: High Energy Efficiency, Excellent Cycleability and Wide Temperature Range Operation

Toshiyuki Nohira, Rika Hagiwara, Kazuhiko Matsumoto, Changsheng Ding, Atsushi Fukunaga, Shoichiro Sakai, Koji Nitta

2148 Science and Technology of High Efficiency Solar Cells and Materials

Masafumi Yamaguchi

2149Preparation of Solar-Grade Silicon By Chemical and Electrochemical Processes

Takayuki Homma, Masahiro Kunimoto, Xiao Yang, Kouji Yasuda, Yasuhiro Fukunaka, Toshiyuki Nohira

2150A System-Level Approach to Evaluating Grid Storage Technologies: Net Energy Analysis of Hydrogen and Batteries for Smoothing Intermittent Renewables

Matthew Pellow, Christopher Emmott, Charles J. Barnhart, Sally Benson

2151Electrochemical Fabrication of 3D Gradient Refractive Index Micro-Optics

Paul V Braun

2152(Invited) The Power Flow Coloring: Concept and Implementation Methods

T. Matsuyama, S. Javaid

2153Preparation of Cu_2SnS_3 Layers By Sulfurization of Electrodeposited Cu-Sn Multilayer Precursors

Diouldé Sylla, Juan Creus, Moises Espindola-Rodriguez, Marcel Placidi, Florian Oliva, Edgardo Saucedo, Alejandro Perez-Rodriguez

2154New Bimetal Catalysts Supported on Silica Nanospheres for the Production of Synthetic Diesel

Carlos Neira, Dayna M. Ortiz, Juan C. Arango, Francisco Márquez, Abniel M. de Jesús

Z05-Sustainable Materials and Manufacturing

All Divisions/Industrial Electrochemistry and Electrochemical Engineering

2155(Invited) Beyond Vapor Compression Technologies

Antonio M Bouza

2156Materials Engineering Using Nano-Fibrous and Molecular Cellulose

Howard Wang

2157Electrochemical Upgrading of Bio-Oil

Luis A. Diaz, Tedd E. Lister, Asanga Padmaperuma, Michael Lilga, Heather Job, Teresa Lemmon, Quan Tran

2158Analysis of High-Speed Rotating Flow in 2D Polar (r - θ) Coordinate

Dr. Sahadev Pradhan

2159The Role of Renewable Hydrogen in Sustainable Manufacturing

Katherine E Ayers

2160Electrochemical Ammonia Synthesis Under Ambient Conditions Using Alkaline Media

Ben Sheets, Kevin Beverage, Gerardine G Botte

2161Electroplating Titanium on Conductive and Non-Conductive Substrates

Margaret Parker

2162Study of HF-Free Pulse Reverse Electropolishing of Nb Surface with an Alkaline Electrolyte

Hui Tian, Junji Taguchi, Chalies E Reece, Akihiro Namekawa, Takayuki Saeki, Hitoshi Hayano

2163Analysis of Pulse-Reverse Nb Electropolishing with H_2so_4 for Srf Cavities

Hui Tian, Chalies E Reece, Melissa Meyerson, Cynthia McCord

2164In Search of an Alternative Solar Grade Silicon Production By Electrochemical Reduction of SiO_2

Bengisu Akpinar, Emre Ergul, Metehan Erdogan, Ishak Karakaya

2165Sustainable Electrochemical Machining for Metal Recovery, Elimination of Waste, and Minimization of Water Usage

E. J Taylor, Brian Skinn, Timothy D Hall, Savidra Lucatero, Stephen Snyder, Heather McCrabb, Holly Garich, Maria E. Inman

2166Influence of Composition of Ti/SnO_2-Sb_2O_5 on the Kinetics of Electro-Oxidation

Qing Ni, Donald W. Kirk, Steven J. Thorpe

2167$Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-\delta}$ on N-Doped Mesoporous Carbon Derived from Organic Waste As a Bi-Functional Oxygen Catalyst

Jian Wang

2168Crack-Healing in Metals By Electrochemical Method

Y.N. Shi

2169(Science for Solving Society's Problems Challenge Grant Winner) Electrochemical Disinfection of Wastewater Using Urea Electrolysis

Madhivanan Muthuvel, Bertrand Neyhouse, Gerardine G Botte

2170Extremely Flat Metal Films Fabricated By a Surface Roughness Transfer Method for Flexible Electronics

Sungjoo Kim, Jong-Lam Lee

Z06-Modeling: From Elucidation of Physical Phenomena to Applications in Design

All Divisions/International Society of Electrochemistry (ISE)

2171(Keynote) Electrochemistry at Regular and Random Arrays of Nano-Disk Electrodes

Christian Andre Amatore, Oleksii Sliusarenko, Alexander Oleinick, Irina Svir

2172Nafion: A Thermodynamic Sketch

Johna Leddy, Nadeesha Rathuwadu

2173(Invited) Ionophore-Doped Ion-Selective Electrode Membranes

Philippe Buhlmann, Xue V Zhen, Jinbo Hu

2174(Invited) Applications of Multivariate Methods in the Study of Ionomer Properties

Carol Korzeniewski, Pei Zhang, Ying Liang

2175A Quantum Dynamics View of Electric Double Layer in PEFC

Xiangyang Zhou

2176(Invited) Translating Complex Electrochemical Mechanisms into Spatiotemporally Distributed Signals at Electrode Arrays for Chemical Analysis Using Generation-Collection Methodologies

Ingrid Fritsch, Mengjia Hu, Mahsa Lotfi-Marchoubeh

2177(Invited) Modeling and Its Use in Interpretation of Experimental Results for Electroactive Films at Electrodes

Svein Sunde, Morten Tjelta

2178(Invited) The Electrochemical Interface at the Atomic Scale

Jan Rossmeisl

2179Molecular Solvation Theory of Liquid Interfaces and Electric Interfacial Layers in Nanosystems

Andriy Kovalenko

2180Simulation of Surface pH-Effects and Near-Surface Ion Distributions during Reactions at the Solid/Liquid Interface

Michael Auinger

2181(Keynote) Multiscale Three-Dimensional Modeling to the Rescue of Electrochemical Energy Devices

Alejandro A. Franco

2182Scaling Relationships for Designing Local Bipolar Electrochemical Systems

Trevor M Braun, Daniel T. Schwartz

2183Importance of Excitonic Effect in Charge Separation at Quantum-Dot/Organic in-Terface: First-Principles Many-Body Calculations

Donghwa Lee

2184(Invited) Development of an Inductively Heated Ultramicroelectrode for SECM

David O Wipf, Timothy J Dowell

2185(Invited) Predicting Electrocatalytic Properties: Modeling Structure-Activity Relationships of Nitroxyl Radicals

David P Hickey, David Schiedler, Ivana Matanovic, Phuong Vy Doan, Plamen Atanassov, Shelley D. Minteer, Matthew S Sigman

2186(Keynote) Formulation for the Treatment of Multiple Electrochemical Reactions and Associated Speciation for the Lithium-Silicon Electrode

Mark W Verbrugge, Daniel R Baker, Xingcheng Xiao

2187(Invited) Numerical Simulations of Mass Transport Using Separation of Variables: an Old Method Rejuvenated with Symbolic Algebra Software

Thomas Holm, Svein Sunde, Frode Seland, David A. Harrington

2188(Invited) Theoretical Analysis of Turbulent Mass Transfer with Rotating Cylinders

John Newman

2189KISSA® : A General User-Friendly Software for Accurate Investigation of Electrochemical Mechanism of Any Complexity

Alexander Oleinick, Irina Svir, Christian Andre Amatore

2190(Invited) Nanoelectrochemical Modeling: Elucidation of the Reaction Mechanism

Michael V. Mirkin, Yun Yu, Min Zhou, Alexander Oleinick, Irina Svir, Christian Andre Amatore

2191First Principles Computational Study of Active and Stable Electrocatalysts for Oxygen Reduxtion and Evolution Reactions

Byungchan Han, Seunghyo Noh, Jeemin Hwang

2192(Invited) Determination of Solvation Populations and Dynamics in Electroactive Polymer Films By Modelling Time-Resolved Neutron Reflectivity

Robert Hillman, Rachel Sapstead, Karl Ryder, Virginia Ferreira, Andrew Ballantyne, Nina-Juliane Steinke, Robert Dalgliesh, Charlotte Beebee, Erik Watkins, Robert Barker, Emma Smith

2193(Invited) First-Principles Study of the Reduction Mechanisms of Ethylene Carbonate on the Amorphous Lithiated Surfaces of Silicon Anodes in Lithium-Ion Battery

Chin-Lung Kuo, Han-Hsin Chiang

2194First Principles Investigation of Photocatalytic Conversion Process at TiO2 Surfaces

Donghwa Lee

2195Identifying the Electrochemical Conditions of Underpotential Deposition and Its Role in Shape-Controlled Synthesis from First Principles

Stephen Weitzner, Ismaila Dabo

2196(Vittorio de Nora Award) Mathematical Modeling of Electrochemical Systems

Ralph E. White

2197Modeling Standing Waves in a Thin Layer Sonoelectrochemical System

Jeffrey K Landgren, Gerhard Strohmer, Johna Leddy

2198Thin Film Deposition Using Rarefied Gas Jet

Dr. Sahadev Pradhan

2199Chaotic Advection Enhanced Mixing in Three Dimensional MHD Flows in Microfluidic Devices

Fangping Yuan, KM Isaac

2200(Invited) The Influence of Flux Changes on Semiconductor Nucleation and Crystal Growth from a Liquid Metal Electrode

Stephen Maldonado

2201(Keynote) Modeling of Impedance

John Newman

2202The Influence of Coupled Faradaic and Charging Currents on Impedance Spectroscopy

Shao-Ling Wu, Mark E. Orazem, Bernard Tribollet, Vincent Vivier

2203Frequency Dispersion Associated with Surface Heterogeneity of Faradaic Reactions Coupled By an Adsorbed Intermediate

Christopher L. Alexander, Bernard Tribollet, Mark E. Orazem

2204Mathematical Models for the Impedance Response of Subcutaneous Glucose Sensors

Morgan Harding, Mark E. Orazem, Bernard Tribollet

2205Ion Mobility in Concentrated Electrolytes Studied By AC-Impedance: An Experimental Approach for Measuring Membrane Potentials

Ritesh Pattnaik, Andres Gabriel Munoz

2206Understanding the Pseudocapacitive Behavior of RuO2 from First Principles

Nathan D. Keilbart, Ismaila Dabo

2207Electrochemical Mechanism Insights from Mott-Schottky Measurements: Application to Europium in Molten Oxide

Andrew Harvey Caldwell, Antoine Allanore

2208(Invited) Advanced Control of Two-Phase Flow in Gdl for PEM Fuel Cells

Yun Wang

2209Model-Free Kinetic Data Analysis Using Massive Dynamic Impedance Data Sets

Robert L Sacci, David A. Harrington

2210Cell Reversal Phenomenon during Start-up of Alkaline Fuel Cell Stacks

Naveed Akhtar

2211(Keynote) Multiscale Modeling of Polymer-Electrolyte-Fuel-Cell Components

Adam Z Weber

2212(Invited) Engineering Approaches to Lithium-Ion Cell Design

Robert Spotnitz

2213(Invited) The Use of Modeling to Reveal Root-Cause and Quantify Degradation Effects in Electrochemical Systems

Thomas F Fuller

2214(Invited) Transient Models for Porous Electrodes for Electrochemical Energy Conversion

Ann Mari Svensson, Svein Sunde

2215Simulation of Transport Properties in Gas Diffusion Layer of PEMFC Using Lattice Boltzmann Method

Jongsung Kim, Sungho Lee, Chulho Yim, Inchul Hwang

2216Modeling Transport Phenomena in Ammonia Fuel Cells

Dongmyung Suh, Gerardine G Botte, Damilola A. Daramola

2217Theoretical Calculations of Ammonia Oxidation Kinetics on Platinum, Iridium and Their Bimetallic Clusters

Ali Estejab, Gerardine G Botte

2218(Invited) Application of Density Functional Theory in the Design of Materials for Fuel Cell Applications

Ivana Matanovic, Plamen Atanassov

2219Design of Nanoporous Carbons As Anode Materials for Sodium (Na) Ion Batteries

Qiong Cai, Argyrios Karatrantos

22201+1D Non-Isothermal and Two-Phase Transient Model of PEM Fuel Cells for Real-Time Estimation and Control

Alireza Goshtasbi, Benjamin Pence, Tulga Ersal

2221Modelling of Processes inside a Rechargeable Oxide Battery

Viktoria Erfurt, Waldemar Braun, Robert Spatschek, Lorenz Singheiser

2222Phase-Field Modeling of Metal Plating on Battery Electrodes

Alta Fang, Mikko Haataja

2223Additional Voltage Loss to Explain an Equilibration Process in Response to a Change in the Anode Gas Using Sm-Doped Ceria Electrolytes

Tomofumi Miyashita

2224Simulation of a Multi-Hole Cathode Bipolar Plate Design for Polymer Electrolyte Membrane Fuel Cells

Kyung Don Baik, Hyunjin Ji, Kiyeol Kim, Jiyeon Kim, Sung Baek Cho

Z07-Science for Solving Society□s Problems (S3P) Challenge: Grant Winner Posters

All Divisions

2225(Science for Solving Society's Problems Challenge Grant Winner) eLatrines: Development of a Fully Cardboard based Microbial Fuel Cell for Pit Latrines

Jörg Kretzschmar, Sebastian Riedl, Robert K. Brown, Uwe Schröder, Falk Harnisch

Z08-Late Poster Session

All Divisions

2226SEI Formation and Evolution in Graphite and ZFO-C Electrodes Probed by X-ray Absorption Spectroscopy

S. J. Rezvani, M. Ciambezi, R. Gunnella, M. Minicucci, Francesco Nobili, M. Pasqualini, M. A. Munoz-Marquez, A. Trapananti, A. Witkowska, A. Di Cicco

2227TiO_2@MnO_2 Core-shell Nanofibers as Positive Electrodes for Asymmetric Supercapacitors

Muhamed Shareef Kolathodi, Victoria Voigt, Gurpreet Singh

2228Beaded Mn_2O_3 Nanofibers by Electrospinning for Supercapacitor Applications

Muhamed Shareef Kolathodi, Victoria Voigt, Gurpreet Singh

2229Investigation of Graphene Oxide Coating for Protection against Seawater Corrosion

Muhamed Shareef Kolathodi, Victoria Voigt, Gurpreet Singh

2230A Novel Electrochemical Biosensor based on Graphene and Cu Nanowires Hybrid Nanocomposites

Mei Chen, Changjun Hou, Danqun Huo, Huanbao Fa, Mei Yang

2231Lithium Ion Battery Electrode Fabrication via Additive Manufacturing

Yan Wang, Jin Liu

2232High Capacity and High Power Ncm/Graphite Lithium Ion Battery Using Microgrid® Expanded Metal Current Collectors

Zhifeng Zhang, Zhenlian Chen, Xianhui Zhang, Yantu Li, Qinggang Zhang, John Hart, Jun Li

2233Treatment of Wastewater Containing Sulfa Drug by Photo Active Anode (Ti/Ru0.3Ti0.7O2) in Photo-assisted Electrochemical Process

Sajjad Hussain, Saima Gul, Juliana R. Steter, Artur de Jesus Motheo